REPORT TO CONGRESS

A STUDY OF PAYMENTS FOR AMBULANCE SERVICES UNDER MEDICARE

Donna E. Shalala
Secretary of Health and Human Services
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TABLE OF CONTENTS

Pages

Introduction to Report 1

Appendix: A Study of Payments for Ambulance Services Under Medicare

I. Introduction 1

II. Background 2

III. Methods 4

Analysis of Medicare Claims Data 5
Data Limitations 6

IV. Findings 8

Patterns of Ambulance Service Use and Costs 8
Provider Type 12
Comparison to Medicaid 13

V. Recommendations 14

Coverage Guidelines 15
Charges for Ambulance Services 16
Claims Processing 18

INTRODUCTION TO REPORT

This report was prepared in response to section 6136 of the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239). The mandate directed the Secretary of Health and Human Services to conduct a study of ambulance services covered under Title XVIII of the Social Security Act (Medicare) which "... shall examine at least the following:

(1) The effect of payment amounts on the provision of ambulance services in rural areas.

(2) The relationship of such payment amounts to the direct and indirect costs of providing ambulance services. Such relationship shall be examined separately-

(A)(i) for tax-subsidized, municipally-owned and operated services,

(ii) for volunteer services,

(iii) for private, for-profit services, and

(iv) for hospital-owned services, and

(B) for different levels (such as basic life support and advanced life support) of such services.

(3) How such payment amounts compare to the payment amounts made for ambulance services under Medicaid plans under Title XIX of the Social Security Act."

The mandate also directed that the report include "... such recommendations for changes in Medicare payment policy with respect to ambulance services as may be needed to ensure access by Medicare beneficiaries to quality ambulance services in metropolitan and rural areas."

BACKGROUND

Ambulance services for Medicare beneficiaries are covered under Part B--the Supplemental Medical Insurance program. In 1987 (the year selected for this report's analysis), Medicare's allowed charges for ambulance services amounted to almost $602 million. By 1991, allowed charges increased to $1.23 billion, double the amount of 1987. Medicare's allowed charges for ambulance services have been rising at an average annual rate of about 20 percent since 1974. These rapid increases in Medicare expenditures can partly be attributed to dramatic changes occurring within the ambulance industry. Since 1974, Federal and local legislation has led to substantial upgrading in the quality and character of emergency medical services (EMS). Local mandates now specify emergency response times, minimum

equipment, supplies, and vehicle capabilities, as well as professional training requirements for staff. Basic life support (BLS) services, which involve elementary life-saving techniques (such as the administration of oxygen or control of bleeding) are being replaced by advanced life support (ALS) services. The latter are distinguished by more advanced life-saving equipment, as well as higher staff skill levels, such as paramedic training. As the complexity of the ambulance industry has evolved, so has the composition of the industry. Volunteer squads, which at one time formed the mainstay of EMS delivery, are being supplanted by private and government ambulance providers with paid staffs. In addition, some municipalities and volunteer squads that previously provided ambulance services free of charge are now billing the Health Care Financing Administration (HCFA) for services provided to Medicare beneficiaries.

The Office of the Inspector General of the Department of Health and Human Services has asserted that Medicare pays unreasonably high amounts for ambulance services. Until 1985, Medicare used the usual, customary, and reasonable charge method to determine payments for ambulance services. Because of concerns about the inflationary nature of this payment method, HCFA introduced an additional fee screen--the Inflation Indexed Charge--in 1985. This screen constrained annual increases in the allowable charge.

In contrast, representatives from the ambulance industry have countered that Medicare's allowed charges are set at levels substantially below costs.

METHODS

There were three main objectives for this study: (1) to analyze aggregate spending and billing patterns for ambulance services under Medicare; (2) to compare Medicare payment to costs by type of ownership, urban/rural location, and level of service (e.g., ALS and BLS); and (3) to compare Medicare to Medicaid payment for ambulance services. HCFA issued a contract to perform the study to Project HOPE. This report is largely based on that study. HCFA does not concur in all of Project HOPE's interpretations of the data or recommendations, but the report is attached as submitted.

For the purposes of this report, payment adequacy was defined as the average allowed charge that equals long-run average costs. The adequacy of Medicare's payment was assessed by:

(1) comparing the costs, as obtained through a survey of providers, of providing ambulance services to allowed charges (from 1987 Medicare Part B data files) in the four States of Massachusetts,

Michigan, Texas, and California; and

(2) comparing Medicare to Medicaid reimbursement in these States plus the States of Georgia, Iowa, New Mexico, and New York. While the results described in this study are not necessarily representative of the country as a whole, insights were gained that are pertinent to evaluating current Medicare reimbursement policies for ambulance services.

Analysis of Medicare Claims Data

The analysis of Medicare claims data was critical to address all three of the major objectives of the study. Data on using Medicare Part B claims files were analyzed to determine the following:

- Total Medicare ambulance spending;
- Ambulance payments by procedure code;
- Local code usage related to ambulance services;
- Payments for nonambulance services to ambulance providers;
- Payments for ambulance services to nonambulance providers;
- The frequency and average reimbursement per trip by level of service;

- Characteristics of beneficiaries using ambulance services;
- Patterns in destination and origin of ambulance trips; and
- Variations in assignment and charge reductions by carrier and urban/rural location.

Data Limitations

The data available for this study have limitations that require caution in examining and interpreting the results. The contractor selected by HCFA to study this issue, Project HOPE, found that the 1987 ambulance services data from the Medicare claims files showed varying degrees of incompleteness, inconsistency, and apparent coding errors. The 1987 claims showed variations in code use and billing practices among the carriers. Four standard ambulance codes from the HCFA Common Procedure Coding System (HCPCS) accounted for more than three-fourths of Medicare ambulance spending. In 1987, the use of local (i.e., nonstandardized) codes was concentrated in carriers serving the States of New York and California. Some of the variations in code use indicated that there were ambulance-related coding problems among several carriers.

For the purpose of analyzing the claims file, claims submitted by specialty 59 (i.e., ambulance companies) were identified as constituting Medicare-covered

ambulance services. Based on a special analysis of the claims file, about 0.9 percent of the claims paid to specialty 59 providers were for nonambulance services. Similarly, about 0.9 percent of all ambulance service claims paid in 1987 were paid to specialties other than those denoted by code 59. Thus, analyzing the claims submitted by specialty 59 providers was seen as yielding a reasonable estimate of Medicare-allowed charges for ambulance services in 1987.

Perhaps the most serious limitation is that Medicare charge data could not be controlled for relevant provider characteristics. Thus, if the mix of providers reimbursed by Medicare in 1987 differs substantially from sampled providers, the results from the sample may not be representative of all Medicare providers. Because cost profiles varied by provider type, the conclusions derived from comparisons by urban/rural location, where provider types were pooled, are most likely to be affected.

Data from the survey of ambulance companies also dictate caution in the use of the inferences drawn. A self-administered voluntary questionnaire was mailed to ambulance companies in California, Massachusetts, Michigan, and Texas for the purpose of acquiring cost and operating data. Responses received may not be nationally representative of the ambulance industry, nor were all responses complete. Only 49 percent of the sampled companies in the 4 States could

provide total cost data. In the absence of an on-site audit, the accuracy of the reported cost data is less than ideal for research purposes.

These data problems point to the need for caution, also, in making recommendations based on inferences drawn from the data. Despite the coding differences, the overall quality of the 1987 Medicare claims data was adequate to provide insights into the use and spending patterns for ambulance services.

FINDINGS

Patterns of Ambulance Service Use and Costs

Analysis of Medicare claims data showed that of the almost $602 million in allowed charges incurred for ambulance services in 1987, about 20 percent were incurred by beneficiaries living in rural areas, though rural beneficiaries comprise about 27 percent of Medicare enrollees. The rate of use was higher among beneficiaries in urban areas (65 users per 1,000 beneficiaries) than among beneficiaries living in rural areas (57 users per 1,000 beneficiaries).

Urban residents also make more frequent use of ambulance services (about 110 runs per 1,000 beneficiaries) than rural residents (about 89 runs per 1,000 beneficiaries). Since the average allowed charge per run was higher for urban residents ($134 per run) than for rural residents ($110 per run), the rate of program allowed charges for urban beneficiaries ($14,818 per 1,000 beneficiaries) was 50 percent higher than for rural residents ($9,854 per 1,000 beneficiaries). While it is clear that charges are higher for ambulance services in urban areas, it is unclear whether the difference in the rate of use between urban and rural areas reflects differential access or different preferences as to the mode of transportation.

The charges allowed by Medicare in the 4 States surveyed covered the average costs of providing rural ambulance services, for both BLS and ALS services. In urban areas, the allowed charges were sufficient to cover BLS services, but were below the average costs of ALS services though exceeding marginal costs. The attached study by Project HOPE presents detailed data at Table 5-1. Nevertheless, a smaller proportion of rural providers than urban providers accepted assignment for Medicare claims. In the analysis of cost outliers, it was clear that in some sparsely-populated communities served by small firms, costs are significantly higher than the average of Medicare's allowed charges. In addition, mileage was shown to be a major contributor to higher average costs for these rural firms.

The study of the claims file showed that services reimbursed in addition to an ambulance base rate (i.e., "add-ons") increased the average allowed charges for BLS and ALS runs by 42 and 74 percent, respectively. Mileage charges contributed the most to the price of a run, with oxygen second. The relative importance of these additionally-reimbursable services to the overall price of an ambulance run varied among the carriers. While most carriers reimbursed an all-inclusive rate for ALS services, some carriers predominantly used the non-inclusive rate.

Results from the Survey of Ambulance Providers suggest that mileage add-ons were considered essential for ambulance providers in rural areas. The analysis of payment adequacy suggested that, when including the add-on services, Medicare's allowed charges were roughly comparable to costs. However, the higher total charges allowed for bills in which the services are separately itemized may be providing an incentive to unbundle the services for billing purposes. This incentive is likely to be strong among providers who perceive that their costs would not be covered by billing an all-inclusive charge.

The analysis of national Medicare claims data underscored the geographic diversity of the ambulance industry. Average allowed charges for an ambulance trip varied widely both within and across Medicare carriers. Service mix also varied.

Ambulance providers in the West were more likely to supply an ALS service to Medicare beneficiaries than those in the East. ALS runs provided to Medicare beneficiaries were roughly twice as expensive as BLS runs.

In 1987, Medicare had not yet developed protocols that clearly specified when ALS services are medically warranted. Medicare spent an estimated $60 million more in 1987 on ALS runs than if all services provided had been BLS. No definitive conclusion has been reached as to the relative medical effectiveness of the two levels of service.

Rural providers are more likely to use volunteer staff for ambulance services. As providers rely on a paid staff, the average cost of ambulance services to a community is likely to increase. Private ambulance services with an all-paid staff, for example, had average costs that were more than twice as high as volunteer providers. Medicare's inflation-indexed charge which constrains increases for historically determined charges, could be restrictive in areas where the mix of providers is changing.

Provider Type

Medicare allowed charges are higher, on average, than the average cost of ambulance services for government and volunteer ambulance providers in the four

States analyzed. This is true regardless of level of service; i.e., ALS or BLS (see Table 5-2 of attached study).

The situation with respect to private providers is more complex. As noted in Table 4-5 in the Project HOPE study, private firms accounted for 92 percent of all scheduled (i.e., nonemergency) runs. Scheduled runs represented 55 percent of the runs provided by private firms.

In 1987, Medicare paid an amount more than, or roughly comparable to, the average cost of private providers to provide scheduled ambulance runs in the four sampled States. Many private providers in these States have specialized in the provision of scheduled services which entail lower cost and a higher profit margin.

Average costs for emergency (i.e., unscheduled) runs (both ALS and BLS) by private providers were substantially higher than allowed charges. Several factors contribute to higher costs for private providers. Private providers more often operate with a paid, rather than volunteer, staff. Survey data also indicated expenses for government providers for office and garage space were substantially lower than those for other provider types, leading one to believe that government providers may be indirectly subsidized for these costs by some other government agency.

Comparison to Medicaid

The results of the survey of Medicaid payment did not provide substantial insight into the issue of payment adequacy. Most of these Medicaid programs use Medicare as a guide in determining maximum allowable charges and most pay at a lower level than Medicare. Six of the eight States sampled did, indeed, pay less than Medicare. Neither of the two State programs that paid higher rates than Medicare had developed their rates based on an analysis of costs. It is difficult to assess whether the rates based on the usual, customary, and reasonable charges were more or less "appropriate" than those paid by Medicare.

Some State Medicaid payment policies are noteworthy and may have potential application for Medicare. These policies include:

- Paying for mileage only after a minimum distance;

- Limiting the maximum number of ambulance runs in a day;

- Paying of the same mileage rate for both ALS and BLS services, especially considering the ability of ambulance firms to charge separately for ALS services and supplies (e.g., intubation, EKG monitoring, etc.); and

- Basing reimbursement on the actual procedures performed and services rendered, rather than the type of vehicle used.

RECOMMENDATIONS

The findings in this report indicate that, overall, ambulance providers are receiving adequate payments for services to Medicare beneficiaries. However, HCFA has undertaken and plans further administrative, regulatory, and legislative initiatives for improving the consistency of carrier coverage determinations and payments for ambulance services. No new legislation is proposed at this time; however, we are considering proposing such legislation as part of the Fiscal Year (FY) 1996 budget.

Coverage Guidelines

Efforts to refine current coverage guidelines for ambulance services were undertaken at HCFA prior to the preparation of this report. The findings reinforce the need to complete this task as soon as possible. As is standard regulatory policy, HCFA plans to issue a notice of proposed rulemaking for public comment.

Among the issues to be addressed in the guidelines are: greater specification of the conditions under which transport by ambulance is reasonable and medically necessary, and differentiation of the conditions under which ALS or BLS transport is appropriate. For the first time coverage guidelines would apply to each level of service with the result of greater consistency among carriers in making coverage determinations and in ascertaining the appropriate level of service required.

Transport services amenable to prior scheduling should continue to be covered by Medicare because a patient's condition may be such that any other method of transportation is contraindicated. Any incentives that may exist to abuse the use of scheduled transport should be reduced by the refined guidelines that would be issued after the rulemaking process is completed. These guidelines would clarify when the conditions for coverage are met, whether the transport is scheduled or not.

Charges for Ambulance Services

The principal determinant of the charge allowed by Medicare for the transport of patients is the type of the vehicle used (i.e., ALS or BLS). Thus, payments are often made for the use of ALS vehicles although a BLS vehicle would have sufficed for the transport. This results in greater Medicare payments since the charges associated with ALS vehicles are, on average, about double those for BLS vehicles.

Some State Medicaid programs studied base their reimbursement for ambulance services on the ambulance services provided rather than on the type of vehicle used. This concept may be applicable for Medicare payment. Therefore, we will reinforce instructions previously issued to our carriers, indicating that Medicare payment should be consistent with the level of care that meets the patient's medical needs. This change can be accomplished administratively in those areas where both BLS and ALS services are available, or where ALS services have become the exclusive level of transport due to decisions made by ambulance suppliers in a community.

Many local governments have explicitly mandated ALS as the sole level of ambulance service to be provided in their jurisdiction. As a result, we will propose rulemaking to base Medicare payment on the level of care required by

the patient rather than the vehicle used for transport. We note that this may be a politically unpopular step. We believe that it is a necessary one, however, because the artificial elevation of ambulance services leads to substantially increased costs for the Medicare program as well as for Medicare beneficiaries. The charges for ALS ambulance runs are, on average, twice as high as for BLS services. While we do not dispute the value of ALS services when they are needed, we wish to provide a strong incentive to curb excessive ALS billings for routine or non-emergency patient transports.

Project HOPE study data indicate that, on average, the present levels of Medicare payments to ambulance companies are adequate to cover costs. Although, the perception of payment inadequacy seems implicit in the lower rate of acceptance of assignment among rural companies (i.e., only 35 percent of the claims were accepted on assignment by rural companies compared to 67 percent by urban companies), the present policy of allowing special payment amounts (i.e., for mileage) permits recognition of unusual local circumstances. The "inherent reasonableness" criterion has also been applied by carriers when the standard methodology of establishing payment allowances produces results that are not reasonable. Nevertheless, the usefulness of inherent reasonableness authority is limited, because it does not address the problem of extremely wide variations in payment amounts across carriers nationwide. We are exploring the development of a fee schedule for payment of ambulance services. Because the statute provides

that payment for ambulance services be based on reasonable charges, this proposal would require legislative action.

Claims Processing

Data limitations described in this report (using data from 1987) point to the need in the future for greater consistency and uniformity among Medicare Part B carriers in making coverage determinations and payments, and in assuring the completeness and accuracy of the data shown on the claims submitted for payment by ambulance providers.

Uniformity in the terminology used to identify the beneficiaries, providers, and the services is required to make comparisons on the services used by groups of beneficiaries or furnished by different classes of providers. The attached Project HOPE study found variance in the terminology used by carriers to describe ambulance services; particularly, the use of local codes. This required a significant amount of "crosswalking" the codes so that services coded by different carriers might be aggregated into similar groupings for analysis.

Inconsistencies among carriers also was found in the submission of information codes required for claims processing. In particular, the origin and destination codes were often omitted and the classification of transport by whether it was an

emergency or scheduled transport was not uniformly followed by all carriers.

HCFA is in the process of standardizing its processing of ambulance claims. This will assure a better data base for evaluating the use of ambulance services and for assessing the need for future policy changes. Among the initiatives currently pursued or contemplated are:

- Phasing out local code use. As part of a program initiated in 1989 to phase out local coding by carriers, HCFA is undertaking the conversion of local ambulance codes to HCPCS. This entails review of individual carrier coding systems to assure the incorporation of local codes that do not duplicate codes already used by HCPCS.

- Use of origin and destination codes. In 1991, HCFA revised the origin and destination modifiers to make them more complete and easier to use. Because coverage of ambulance services is determined by ambulance destination, these modifiers provide a better basis for examining ambulance service patterns and ensuring appropriate payments.

- HCFA is weighing the benefits and costs of modifying the specialty code for ambulance companies to identify them by salient characteristics; such as, type of ownership. The availability of this information would permit,

for the first time, an evaluation of the effect of location on different types of suppliers and whether policies should be developed that differentiate providers by these characteristics.

- HCFA is also in the process of completing studies mandated under section 4207(e) of the Omnibus Budget Reconciliation Act of 1990 studying the impact of physician financial relationships with health care entities on beneficiary utilization of selected services in 10 States. Among the entities to be studied are ambulance companies. The findings of this study have been prepared as a separate transmittal.

The administrative initiatives underway and planned, taken together, will have positive long term effects on the administration of the Medicare ambulance benefit. These proposed changes will provide HCFA with improved information to examine the patterns of use and payments for ambulance services. Examination of Medicare ambulance coverage and payment policy issues, once regulatory changes are made, will assure greater confidence in ascertaining the need for policy changes and understanding their implications. Moreover, although no specific legislative changes are recommended at this time, as discussed above, we are considering a legislative proposal to establish a fee schedule for payment of ambulance services. We are considering submitting a proposal for the FY 1996 budget.

HCFA is mindful of Congressional concerns about assuring access to transport services in rural areas and equity in the payment for the services. The agency will be especially sensitive to these objectives in the proposed initiatives.

APPENDIX

A STUDY OF PAYMENTS FOR AMBULANCE SERVICES UNDER MEDICARE

Final Report

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Penny E. Mohr
Doug M. Brown
Mary Beth Fiske
Beth A. Owen

Project HOPE

Center for Health Affairs
Chevy Chase, MD 20815

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Table of Contents

EXECUTIVE SUMMARY vii

SECTION 1. INTRODUCTION

1.1 Purpose 1-1
1.2 Methodology 1-1
1.3 Structure of the Report 1-2

SECTION 2. BACKGROUND

2.1 Overview 2-1
2.2 Medicare Coverage of Ambulance Services 2-4
2.3 Policy Issues 2-6

SECTION 3. MEDICARE CLAIMS ANALYSIS

3.1 Research Questions 3-1

3.2 Methodology 3-3
3.2.1 Choice of Data Files 3-3
3.2.2 Defining Ambulance Services 3-6
3.2.3 Defining an Ambulance Run 3-7
3.2.4 Defining Level of Service 3-9

3.3 Quality of Claims Data 3-10

3.4 Descriptive Analyses 3-17
3.4.1 Total Medicare Ambulance Spending 3-17
3.4.2 Allowed Charges for Ambulance Services by Procedure Code 3-18
3.4.3 Use of Local Codes 3-23
3.4.4 Charges for Nonambulance Services by Ambulance Providers 3-24
3.4.5 Allowed Charges for Ambulance Services by Nonambulance Providers 3-26
3.4.6 Frequency and Average Charge Allowed Per Trip by Level of Service 3-28

3.4.7	Characteristics of Beneficiaries Using Ambulance Services	3-32
3.4.8	Patterns in the Origin and Destination of Ambulance Trips	3-35
3.4.9	Variations in Assignment and Charge Reductions	3-39
3.5	Conclusion	3-42

SECTION 4. SURVEY OF AMBULANCE PROVIDERS

4.1	Methodology	4-1
4.1.1	Sample Selection	4-2
4.1.2	Survey Design	4-4
4.1.3	Data Collection Procedures	4-6
4.1.4	Survey Responses and Properties of the Sample	4-7
4.1.5	Item Nonresponse and Imputation	4-11
4.2	Description of Survey Results	4-13
4.2.1	Characteristics of the Service	4-13
4.2.2	Services Provided	4-14
4.2.3	Resources	4-18
4.2.4	Expenditures	4-21
4.2.5	Fee Structure and Sources of Funds	4-21
4.3	Cost Function Estimation	4-25
4.4	Conclusion	4-33

SECTION 5. ASSESSING MEDICARE PAYMENT ADEQUACY FOR AMBULANCE SERVICES

5.1	Background	5-1
5.2	Methodology	5-7
5.3	Payment Adequacy for Rural Providers	5-10

Table of Contents (Continued)

5.4	Payment Adequacy by Type of Provider	5-14
5.5	Conclusion	5-17

SECTION 6. MEDICAID SURVEY

6.1	Methodology	6-1
6.2	Intergovernmental Health Policy Project (IHPP) Study	6-2
6.3	Project HOPE Medicaid Survey	6-4
	6.3.1 Coverage Policies	6-5
	6.3.2 Rate Structure	6-6
	6.3.3 Comparison to Medicare Allowed Charges	6-10
	6.3.4 Changes in Reimbursement Structure	6-14
6.4	Conclusion	6-15

SECTION 7. SUMMARY AND POLICY RECOMMENDATIONS

7.1	General Insights from the Analysis of Medicare Claims Data	7-1
7.2	Adequacy of Medicare's Allowed Charges for Ambulance Services	7-4
	7.2.1 Urban/Rural Location	7-5
	7.2.2 Provider Type	7-7
	7.2.3 Comparison to Medicaid	7-8
7.3	Policy Recommendations	7-9
	7.3.1 Determination of Rates	7-9
	7.3.2 Scheduled Runs	7-10
	7.3.3 Alterantive Payment Approaches	7-12

SECTION 8. REFERENCES 8-1

LIST OF APPENDICES

Appendix A Procedure Code Descriptions and Mapping by Level of Service, Base/Add-on, and Ambulance/Nonambulance Service

Table A-1: Mapping of Level II HCPCS Codes
Table A-2: Mapping of Level III HCPCS (Local) Codes

Appendix B Modifier Descriptions and Mapping

Table B-1: Mapping of Local Modifiers to HCPCS Modifiers Indicating Origin and Destination of Ambulance Runs

Appendix C Table C-1: Range and Standard Deviations of Selected Procedure Codes, by Carrier
Table C-2: Comparison of Prevailing Charges to Average Reimbursement for Selected HCPCS Codes, 1987

Appendix D Tables for Section 3

Table D-1: Ambulance Allowed Charges by Carrier and Region, 1987
Table D-2: Procedure Code Reimbursement by Carrier
Table D-3: Average Allowed Charge for Selected Ambulance Codes, 1987
Table D-4: Local Code Use by Carrier, 1987
Table D-5: Allowed Charge for Nonambulance Codes by Carrier, 1987
Table D-6: Ambulance Related Charges for Providers Other than Specialty 59, by Carrier, 1987
Table D-7: Average Allowed Charge by Level of Service, by Carrier, and Region, 1987
Table D-8: Comparision of Average Allowed Charges for an Ambulance Trip to Base Rates by Level of Service and Carrier, 1987

Appendix E Provider Survey and Number of Respondents by Question

Provider Survey

Appendix E (Continued)

Table E-1: Number of Respondents, Mean, and Standard Deviation for Questions on the Survey of Ambulance Providers

Appendix F Econometric Model

Table F-1: Sample Weights Used by State
Table F-2: Cost Function Estimates for Government Providers
Table F-3: Weighted Means and Standard Deviations for Government Providers
Table F-4: Cost Function Estimates for Private Providers
Table F-5: Weighted Means and Standard Deviations for Private Providers
Table F-6: Cost Function Estimates for Volunteer Providers
Table F-7: Weighted Means and Standard Deviations for Volunteer Providers
Table F-8: Cost Function Estimates for Urban Providers
Table F-9: Weighted Means and Standard Deviations for Urban Providers
Table F-10: Cost Function Estimates for Rural Providers
Table F-11: Weighted Means and Standard Deviations for Rural Providers

PREFACE

This report was prepared by the Project HOPE Center for Health Affairs for the Health Care Financing Administration (HCFA), under Cooperative Agreement No. 99-C-99168/3-02. Penny Mohr was the project leader for the report, which was co-authored by Doug Brown, Mary Beth Fiske, and Beth Owen. A survey of ambulance providers was conducted, under subcontract, by Social and Scientific Systems, Inc. Yimin Ngan and Keith Umbel provided essential computer programming assistance. The authors are grateful for the substantive input provided by the Project Officer, Herb Silverman, Elisa Tunanidas, from HCFA's Office of Payment Policy and Lou Garrison, Director of the Center for Health Affairs. Outside assistance was provided by experts in emergency medical services that are too numerous to mention. The development of a survey instrument, however, was greatly aided by advice from Bob Cadigan, the Assistant Director of the Massachusetts Office of Emergency Services, and Joe Paolella, Executive Director of the New Haven Ambulance Service. The authors appreciate the secretarial support provided by Ronnette White and Darlene Bostic. As usual, the opinions and estimates made here are those of the authors.

EXECUTIVE SUMMARY

Objectives

This study presents the results of the first comprehensive examination of the use of ambulance services under Medicare. There were three primary objectives of this study:

(1) to analyze aggregate spending and billing patterns for ambulance services under Medicare;

(2) to compare Medicare's allowed charges to costs by type of ownership, urban/rural location, and level of service (e.g., advanced life support and basic life support); and

(3) to compare Medicare to Medicaid payment for ambulance services.

The first objective was quite general, responding to a variety of research and policy interests within the Health Care Financing Administration (HCFA). The next two objectives were more specific and stemmed from a mandated study on ambulance services passed under the Omnibus and Budget Reconciliation Act of 1989 (OBRA 1989). These last two objectives resulted from particular concerns about the adequacy of Medicare's allowed charges for ambulance services. Because neither Medicare claims for ambulance services, nor industry costs had ever been analyzed in depth, one overarching concern was whether the data would be of high enough quality to support these analyses. In addition to the objectives mentioned above, an analysis of data quality became an integral part of the study.

Background

Ambulance services for Medicare beneficiaries are covered under Part B--the supplemental medical insurance plan. In 1987, Medicare allowed charges for ambulance services amounted to about $602 million. Reimbursement for ambulance services has risen at an average annual rate of more than 20 percent since 1974 (Office of the Inspector General (OIG), 1987). This rate is twice that of medical inflation, but equal to increases in Medicare expenditures on physician services (Helbing, et al., 1991).

The rapid increases in Medicare expenditures can partly be attributed to dramatic changes occurring within the ambulance industry. Since 1974, federal and local legislation has led to substantial upgrading in the quality and character of emergency medical services (EMS). Local mandates now specify emergency response

times, minimum equipment, supplies, and vehicle capabilities as well as professional training requirements for staff. Basic Life Support (BLS) services, which involve elementary life-saving techniques (such as the administration of oxygen or control of bleeding) are being replaced by Advanced Life Support (ALS) services. The latter are distinguished by more advanced life-saving equipment, as well as higher staff skill levels, such as paramedic training. As the complexity of the ambulance industry has evolved, so has the composition of the industry. Volunteer squads, which at one time formed the mainstay of EMS delivery, are being supplanted by private and government ambulance providers with paid staffs. In addition, some municipalities and volunteer squads that previously provided ambulance services free of charge are now billing HCFA for services provided to Medicare beneficiaries.

Apart from these legitimate reasons for cost increases, HCFA is concerned about the potential for abuse of the ambulance services benefit. For example, billing for services at a higher level of life support than is medically warranted has been cited as one of the more common abuses of the Medicare program by suppliers of ambulance services. There is also some concern that providers of ambulance services may be gaming the nonrestrictive billing system. In other words, providers may be increasingly billing separately (unbundling) for special services, such as endotracheal intubation or electrocardiogram (EKG) monitoring that were previously included in the charge for a base ambulance trip. Finally, ambulances have been used even when a patient could have been transported safely by other means, since Medicare does not cover transport in other vehicles (e.g., vans, buses, taxis, etc.).

There have also been allegations that Medicare pays unreasonably high amounts for ambulance services (OIG, 1987). Until 1985, Medicare used the usual, customary, and reasonable charge method to determine reimbursement for ambulance services. Because of concerns about the inflationary nature of this payment method, HCFA introduced an additional fee screen--the Inflation Indexed Charge (IIC)--in 1985. This screen constrained annual increases in the lowest allowable charge.

In contrast, representatives from the ambulance industry have countered that Medicare reimbursement is set at levels substantially below costs. These claims were in part the impetus behind the passage of the OBRA 89 legislation which mandated this study on the appropriateness and adequacy of Medicare reimbursement for ambulance services. Private ambulance firms and those located in rural areas have been particularly vocal in this regard.

Methodology

As mentioned previously, there were three main objectives for this study: 1) to analyze aggregate spending and billing patterns for ambulance services under Medicare. 2) to compare Medicare allowed charges to costs by type of ownership, urban/rural

location, and level of service (e.g., advanced life support and basic life support); and 3) to compare Medicare to Medicaid payment for ambulance services. In order to accomplish these three objectives, the most recent Medicare claims data (1987) were analyzed, a survey of ambulance providers was conducted in four States, and a survey of Medicaid programs was conducted in eight States. In addition, a previous review of Medicaid transportation services was summarized.

Analysis of Medicare Claims Data

The analysis of Medicare claims data was critical to address all three of the major objectives of the study. Data on all four Part B claims files were analyzed (the Procedure File, the Beneficiary File, the Provider File, and Prevailing Charge File). To address the first objective, a variety of descriptive tables were produced and aggregate and across carrier analyses were conducted of the following:

- Total Medicare ambulance spending;
- Ambulance payments by procedure code;
- Local code usage related to ambulance services;
- Payments for nonambulance services to ambulance providers;
- Payments for ambulance services to nonambulance providers;
- The frequency and average reimbursement per trip by level of service;
- Characteristics of beneficiaries using ambulance services;
- Patterns in destination and origin of ambulance trips; and
- Variations in assignment and charge reductions by carrier and urban/rural location.

In addition, an overall assessment of the quality of Medicare claims data was conducted.

Survey of Ambulance Providers and Estimation of Industry Costs

Since no definitive studies have been done on ambulance service costs and no comprehensive secondary data sources exist on service costs, in order to compare Medicare reimbursement to costs, primary data collection was necessary. Project HOPE chose to analyze industry costs through an econometric or economic approach. A major advantage of the economic approach is that it can be less costly to estimate costs that are representative of a larger number of actual providers. Alternative approaches, such as the conduct of detailed audits or time and motion studies are prohibitively expensive.

No national listing of public and private ambulance providers currently exists. Consequently, selecting a nationally representative sample would be very cumbersome and expensive, involving the development of a sampling frame in all 50 States. In light

of time and budget constraints, a sample of providers in four States was determined to be an appropriate, if limited, method for investigating provider cost differences. The four States selected for the Survey of Ambulance Providers were California, Massachusetts, Michigan, and Texas. These States were chosen for their geographical diversity, their disproportionately large representation of Medicare beneficiaries (21 percent) and ambulance claims (32 percent), and their representation of a diverse mix of firms by type of ownership and urban/rural location.

A survey of 1989 firm costs for 470 ambulance providers was conducted by mail, with telephone follow-up. An overall response rate of 68 percent was achieved. The resulting sample was broadly representative of the national distribution of ownership, except for a slight overrepresentation of private firms. Sixty percent of respondents were classified as rural, a proportion roughly equal to the sample. Survey results were weighted in order to produce representative cost estimates for the four States.

Five separate multi-product cost functions were estimated for three ownership types (i.e., private, government, and volunteer) and two locations (i.e., urban, rural). The separate products identified were emergency ALS services, emergency BLS services, and nonemergency services. The latter were defined as scheduled ambulance runs. These cost functions achieved a high degree of explanatory power, with independent variables explaining more than 70 percent of the variation in total costs. Signs and sizes of the parameters accorded with economic theory and with expectations based on anecdotal reports of the industry. From these functions, marginal and average costs were calculated for the "typical" firm in these four States and compared to average Medicare allowed charges for an ambulance run by level of service.

Survey of Medicaid Programs

In order to compare Medicare allowed charges for ambulance services to Medicaid payments, a survey of Medicaid program officials was conducted in the eight States of: California, Georgia, Iowa, Massachusetts, Michigan, New Mexico, New York, and Texas. As in the Survey of Ambulance Providers, these States were chosen because they represent the four major regions of the United States and they encompass different types and concentrations of urban and rural areas.

Since this was not a comprehensive survey of all Medicaid programs, a previous study, A 50-State Review of Medicaid Transportation Services, conducted by the Intergovernmental Health Policy Project (IHPP) in 1985, was also reviewed and summarized.

Primary data collection was conducted by phone using an interview guide. Information was elicited on eligibility and coverage restrictions on ambulance services, the rate structure and level of Medicaid reimbursement in 1989, and recent or

anticipated changes in reimbursement policies. Average Medicare reimbursement for selected procedure codes (e.g., BLS, one-way, base trip) was compared to average Medicaid reimbursement for the same type of service.

Findings

General Insights

The analysis of Medicare claims data underscored general findings that the ambulance industry is marked by diversity. Average allowed charges for an ambulance trip varied widely both within and across Medicare carriers. Service mix also varied by region, with ambulance providers in the West more likely to supply an ALS service to Medicare beneficiaries than those in the East. ALS runs provided to Medicare beneficiaries were roughly twice as expensive as BLS runs.

Medicare has not adopted uniform protocols regarding when advanced life support services are medically warranted. Considering: 1) that Medicare spent an estimated $60 million more in 1987 on ALS runs than if all services provided had been BLS and: 2) that there is disagreement in the literature about the medical effectiveness of ALS services, the development of medical protocols may produce savings without jeopardizing emergency service quality. This is an area deserving further research.

Services reimbursed in addition to an ambulance base rate, increased the average allowed charges for BLS and ALS runs by 42 and 74 percent, respectively. Mileage charges contributed the most to the price of a run, with oxygen second. The relative importance of these additionally-reimbursable services to the overall price of an ambulance run varied among the carriers. While most carriers reimbursed an all-inclusive rate for ALS services, some carriers predominantly used the noninclusive rate

Although this study was not designed to evaluate whether unbundling of services was economically justifiable, results from the Survey of Ambulance Providers suggest that mileage add-ons are essential for ambulance providers in rural areas. The analysis of payment adequacy also suggested that when including all of these add-on services Medicare allowed charges were roughly comparable to costs. Some providers may be unbundling services because Medicare allowed charges for base rates is below the average costs of providing an ambulance run.

While Medicare does not distinguish between scheduled and unscheduled runs in determining allowed charges for ambulance services, persons that receive more than one ambulance trip in a day are likely to represent a high proportion of these runs. Persons with ESRD were disproportionately represented among this group. Overall, persons with ESRD were nearly ten times more likely to use ambulance services than the general Medicare population. A separate study on the use of ambulance services

by the ESRD population is currently being conducted by HCFA. Further policy implications regarding this high use group are discussed below.

As expected, variations in code use and billing practices were evident among the carriers. However, only four ambulance HCPCS codes (A0010, BLS base rate; A0020, BLS mileage rate; A0220, ALS base rate; and A0221, ALS mileage rate) accounted for more than three-fourths of Medicare ambulance charges. The use of carrier-specific (or local) codes was concentrated in carriers serving the States of New York and California. Some of the variations in code use were indicative of ambulance-related coding problems among the carriers that warrant further investigation by HCFA. Evidence of miscoding was particularly prevalent among the carriers serving the States of South Carolina, Washington, Oregon, and Ohio.

Despite these coding differences, the overall quality of Medicare claims data was adequate to allow an analysis of charge patterns. In the future, the general trend towards more uniform coding practices among the carriers is encouraged. This includes both the movement away from the use of local codes and the adoption of standardized code definitions. If potential abuse of a return trip is to be monitored, more carriers should be encouraged to use origin and destination modifiers.

Several important insights were gained from the estimation of a cost function for the ambulance industry. In most cases, the provision of ambulance services was a decreasing cost industry, with marginal costs lower than average costs for all levels of output. This has two important implications with respect to pricing. First, under these circumstances, marginal cost pricing is not optimal, as a firm would take a loss for each trip provided. Based on this assessment, payment adequacy was defined as allowed charges at levels that equal long-run average costs. Second, this implies that the ambulance industry is a natural spatial monopoly. Allowing competition within geographic limits would drive up the average costs of service.

Other empirical findings were that the average costs of private providers were higher than those for other provider types and average costs for rural providers were lower than those for urban providers. As expected, ALS emergency services cost more than BLS services. The average cost of providing a nonemergency (scheduled) ambulance run was substantially lower than that of emergency runs. Finally, factors that significantly affected provider costs included: 1) whether or not response time were mandated (for government and volunteer organizations); and 2) the average distance of a call (for rural firms).

Adequacy of Allowed Charges

To examine the adequacy of Medicare allowed charges: 1) Medicare allowed charges were compared to costs in four States; and 2) Medicare allowed charges were

compared to Medicaid reimbursement in eight States.

In the comparison of costs to allowed charges, it is important to keep in mind some of the limitations of this study. First, the results are based on a geographically-limited sample and, therefore, are not necessarily representative of the nation. Second, the cost and charge figures compared are estimates, with associated standard errors. The results should be interpreted as approximate and not an indication of the absolute difference between charges and costs. Finally, average Medicare charges could not be adjusted for provider mix or other relevant provider characteristics. To the extent that the average ambulance provider serving Medicare beneficiaries in the sampled States differed from sampled providers, the robustness of the conclusions could be affected.

Despite these limitations, the results basically accorded with our intuition about the nature of the ambulance industry, and, should provide HCFA with further insights useful in establishing Medicare policies for ambulance services.

Urban/Rural Location. Based on the results of this study, Medicare's allowed charges in the four States analyzed appeared to cover the long run average costs of providing rural ambulance services. There were clear cost outliers, however. These firms were primarily small, serving very sparsely-populated communities. If these firms do not represent the norm in the Medicare locality, HCFA could be paying at rates that are significantly below the average cost of delivering emergency services. These results are also predicated on a mix of provider types that are primarily volunteer. As this mix changes more towards a paid staff, the average cost of emergency services to a community could increase dramatically. Medicare's Inflation-Indexed Charge, which constrains increases for historically-determined costs, could be too restrictive in areas where the mix of providers is changing dramatically.

On average, Medicare's allowed charges for urban providers was also adequate for BLS services. While Medicare's allowed charges were lower than the average cost of ALS services. They exceeded the marginal cost of those services. The adequacy of Medicare's allowed charges, in this case, depends upon the extent to which local government subsidizes urban ambulance operations.

Provider Type. The analysis of costs by provider type indicated that Medicare's allowed charges are higher, on average, than the average cost of ambulance services for government and volunteer ambulance providers in the four States analyzed. This is true regardless of level of service.

In contrast, this analysis indicated that Medicare is paying less than average costs for emergency runs (both ALS and BLS) for private providers. However, Medicare's allowed charges are roughly comparable to the average cost of providing a scheduled ambulance run for private providers. This is clearly one reason why private providers

in the survey specialized in the provision of a scheduled run service. The costs of these types of runs are substantially below the cost of providing emergency runs. Despite this fact, most Medicare carriers do not distinguish between these two distinct types of services in establishing charges for ambulance services.

Comparison to Medicaid. The results of the survey of Medicaid programs did not provide substantial insight to the debate on payment adequacy. Most of these Medicaid programs use Medicare as a guide in determining maximum allowable charges and most attempt to pay at a lower level than Medicare. Although two programs paid rates that were higher than Medicare's neither of these had developed their rates based on an analysis of costs. It is difficult to assess whether the rates based on the usual, customary, and reasonable charges were more or less "appropriate" than those paid by Medicare.

Some of the Medicaid programs' reimbursement policies, however, warrant further consideration for the Medicare program. These policies include: 1) payment for mileage only after a minimum distance; 2) limiting the maximum number of ambulance runs in a day; 3) payment of the same mileage rate for both ALS and BLS services, especially considering the ability of ambulance firms to charge for ALS services and supplies (e.g., intubation, EKG monitoring, drugs, etc.) separately; and 4) basing charges on the actual procedures performed and services rendered, rather than the type of vehicle used.

Policy Recommendations

Several important policy implications regarding the establishment of charges for ambulance services can be derived from this study. Recommendations have been made relating to: 1) the use of inherent reasonableness criteria; 2) payment for scheduled runs; 3) strategies to improve community coordination of service delivery; 4) competitive bidding; and 5) the viability of a national fee schedule.

Inherent Reasonableness Criteria. The Office of the Inspector General (OIG) recommended that Medicare carriers apply inherent reasonableness criteria more stringently when reimbursing for ambulance services. These criteria allow carriers to adjust rates downward if charges do not appear to be economically justified. The use of these criteria would be particularly applicable in areas with unregulated rates served by one or a few providers.

These criteria could also be used to adjust rates upwards for areas that have legitimately higher costs. These adjustments could be made for sole community providers serving sparsely-populated areas where, because of economies of scale in the industry, costs are legitimately higher. A similar adjustment is made by Medicare in reimbursing for hospital services. Rates also could be adjusted if a strong case can be

made that the decline in the use of volunteer staff, or changes in community standards, have dramatically increased costs.

Scheduled Runs. A major finding of this study was that scheduled runs are provided at substantially lower cost than emergency runs. However, most Medicare carriers do not distinguish between scheduled and unscheduled runs for reimbursement. One approach would be to encourage the use of a separate code for scheduled runs. Since, based on survey estimates, a scheduled run costs substantially less than an emergency run, savings most likely would outweigh the administrative costs (e.g., change in coding practices among some carriers, policing, etc.).

There is a question, however, of whether or not Medicare should even be covering scheduled runs as part of the federal insurance package. There are three considerations that are important when evaluating the inclusion of a benefit in an insurance package: 1) Is the event likely to lead to a catastrophic lost?; 2) Is the event predictable?; and 3) Is there the possibility of moral hazard (defined as when insurance coverage affects a persons' probability of using the benefit)?

In relation to scheduled runs, several points are worthy of note. First, the cost of a scheduled run is relatively low. Second, scheduled runs, particularly when related to transport to dialysis facilities, may be predictable. Finally, the very high use rates among the ESRD population for scheduled return trip services suggest that there may be some moral hazard. All three of these factors suggest that HCFA should consider exclusion of scheduled runs from the Medicare benefit package, although still allowing for stop-loss coverage for legitimate high users.

Strategies to Improve Community Coordination. Based on the findings of this study, a strong case can be made for community coordination of the provision of emergency medical services. First, unchecked competition among ambulance providers leads to higher, not lower costs of services. Second, if sole service rights are granted by a community to one ambulance provider, the monopoly position of the ambulance firm coupled with a highly inelastic demand for emergency services, can lead to prices that exceed long run average costs.

Those providers not receiving subsidies or having to pay their labor force are clearly at a disadvantage to those that do receive subsidies or have a volunteer force. One suggestion from the ambulance industry is to establish separate rate pools for each type of provider or vary payments by the level of subsidy. There are three reasons why this approach should be avoided. First, related to the level of subsidy, type of ownership is not the main characteristic distinguishing the level of subsidy received. Some private providers do receive local subsidies. Others have developed an insurance mechanism, known as subscription services, which serves a similar purpose. Second, establishing separate rate pools can fortify the monopolistic position of ambulance firms

within the rate pool and serve to fragment the market. This is the opposite of the desired effect of increasing community coordination. Finally, the administrative costs of varying rates based on the level of subsidy, or use of volunteer force, are likely to be prohibitive.

One option for Medicare would be to provide for emergency services through a block grant program that encourages local coordination. This option, given the variety of approaches to EMS standards and the variety of approaches to local subsidy, may be the most efficient. Under this option, Medicare could determine an amount per beneficiary that would be paid to States to ensure the provision of emergency medical services for Medicare beneficiaries. This amount may be adjusted by geographical cost differences and could be introduced initially on a demonstration basis.

Competitive Bidding. The Office of the Inspector General suggested that Medicare may accrue substantial savings by encouraging carriers to adopt a competitive bidding model for ambulance services. This approach has been adopted by the Veteran's Administration, some hospitals, some municipalities, and selected Medicaid programs. While this approach may be viable for a community, there are many drawbacks for Medicare. The primary difficulty is that in an emergency situation, response time plays an important role in patient outcome. Local regulation often dictates which provider responds to an emergency, without discrimination by insurance coverage. However, for scheduled transport, a competitive bidding model may be a viable option.

National Fee Schedule. Finally, the viability of establishing a national fee schedule for emergency services deserves mention. For several types of procedures and services (e.g., laboratory services and physicians' services), Medicare has moved towards the establishment of a national fee schedule. The empirical finding that differences in the degree response capability (as proxied by whether or not response times were mandated) was an important factor affecting costs was discussed. This response capability and the degree of local regulation varies substantially across communities. If Medicare were to establish a national fee schedule for ambulance services, they would clearly reward those communities with lower standards and punish those with higher standards. Since Medicare has not developed federal standards for beneficiaries, this approach is not recommend at this time.

Section 1: Introduction

1.1 Purpose

There are three primary objectives of this study. The first is to analyze aggregate spending and billing patterns for ambulance services provided under Medicare. In FY 1987, Medicare allowed charges for ambulance services were estimated to be almost $602 million. Until now, there has been no systematic and comprehensive analysis of Medicare spending on ambulance services.

Two additional objectives stem from a mandated study on ambulance services passed under the Omnibus Budget Reconciliation Act of 1989 (Public Law 101-239). These objectives address more specific concerns about the adequacy of Medicare payment to providers of ambulance services and are as follows:

(i) to compare Medicare payment to costs by type of ownership, urban/rural location, and level of service (e.g., advanced life support and basic life support); and

(ii) to compare Medicare to Medicaid payment for ambulance services.

1.2 Methodology

In order to accomplish these three objectives, we have analyzed the most recent Medicare claims data (1987), conducted a survey of ambulance providers in four states, and conducted a survey of Medicaid programs in eight states. Because neither Medicare claims for ambulance services nor industry costs had ever been analyzed in depth, one overarching concern was whether the data would be of high enough quality

to support these analyses. Data quality limitations have been addressed throughout this report.

1.3 Structure of the Report

This report is divided into six remaining sections. Section 2 provides background information and an overview of relevant issues including Medicare reimbursement policies. Sections 3 and 4 describe the study design and findings of the Medicare Claims Analysis and the Ambulance Provider Survey, respectively. These two components are combined to assess the adequacy of Medicare reimbursement to providers of ambulance services in Section 5. The methodology and findings from a telephone survey of Medicaid programs and a comparison of Medicare and Medicaid rates are presented in Section 6. Section 7 presents a summary and discussion of the principal findings and recommendations addressing problems and issues identified by the study.

Section 2: Background

2.1 Overview

The ambulance industry is characterized by diversity. It includes: one-vehicle operations staffed entirely by community volunteers; large, complex municipal fire and rescue departments; and private operations staffed by paid professionals operating independently or contracting their services directly to a municipality.

According to a survey of state emergency medical services (EMS) authorities, there were approximately 15,000 EMS providers in the United States (EMS, 1986). The breakdown of EMS providers by type in 1986 was as follows:

Type	Number
Fire Departments	5,300
Volunteer Squads	3,100
Private	2,100
Government	2,300
Hospital Based	900
Air	300
Other	800

This distribution varies by region, with volunteer services more prevalent in the Northeast and private services more prevalent in the West.

A study of EMS in the top 200 most populous cities revealed that more than half rely upon fire or municipal operations for emergency nonscheduled ambulance services (Keller and Forinash, 1990). A large part of the business in the ambulance industry consists of scheduled ambulance runs. These are primarily provided by private companies (Office of the Inspector General (OIG), 1987).

The number of volunteer ambulance providers is declining, while the number of private and government ambulance providers is increasing (Keller and Forinash, 1990). This can, at least partly, be attributed to the fact that the industry has evolved into a highly technical business using more advanced technology and professionally-trained staff. In addition, the risk of legal liability has increased and volunteerism, in general, has waned.

Federal legislation (The Federal Emergency Medical Systems Act of 1973) led to substantial upgrading in the quality and character of EMS. At that time, two levels of service were identified. Basic Life Support (BLS) services involve noninvasive emergency patient care (such as the administration of oxygen or control of bleeding). Advanced Life Support (ALS) services are distinguished by more advanced lifesaving equipment, such as the capability of maintaining radiotelephone contact with a hospital (telemetry), as well as higher staff skill levels, such as paramedic training. Federal specifications for these levels of service, as well as professional training standards have been published by the General Services Administration. However, local variation in EMS standards persists.

Over the years, local governments became increasingly involved in regulation of the ambulance industry. In some areas, local mandates now specify emergency response times, minimum equipment, supplies, and vehicle capabilities, as well as professional training requirements for the staff. Some local governments permit only ALS services. An ambulance provider faced with a multiplicity of standards established by contiguous communities is required to comply with the most stringent of these. These mandates have probably contributed to cost increases within the industry.

While there is controversy over the appropriateness of ALS services for many emergencies (Jacobs et al., 1984; Alexander et al., 1984), many two-tiered systems that

provide either ALS or BLS services based on projected or interred patient needs are being replaced by all-ALS services. In a recent survey, eighty-two percent of the 200 most populous cities respond with ALS to all emergencies (Keller and Forinash, 1990). Only three of those cities provide only BLS services to all emergencies. As more cities contract out their ambulance services to private providers, it is not unusual for these providers to supply an all-ALS service.

As the complexity of the ambulance industry has evolved, so has the approach toward patient charges. Traditionally, volunteer squads and municipalities provided ambulance services free of charge. Not only has the mix of providers changed toward private companies that charge for their services, but municipalities, in seeking ways to offset mounting deficits, are now charging for services. There is also evidence of volunteer squads charging for services. Often both volunteer organizations and municipalities set these charges at highly subsidized rates.

Even with patient charges becoming the norm, there is likely to be limited price competition in the industry. Because the industry relies on "idle" capacity in order to be able to respond quickly to emergencies when they do occur, the marginal cost of providing an ambulance run is less than the average cost of providing that same run. In economic terms, there are economies of scale in the industry, i.e., the larger the volume of ambulance services provided, the lower the average cost of providing those services. Often this leads to only a few companies providing services in an area, creating, in effect, a local monopoly. Because ambulance services are a necessity for emergency cases, there is also a lack of consumer price sensitivity. This combination of factors in the industry (i.e., the tendency towards local monopoly and the lack of consumer price sensitivity) give rise to a situation where service charges could be set at a level substantially higher than cost. Some cities have approached this problem by adopting a public utility model of regulation for EMS (Keller and Forinash, 1990). For example, it is not uncommon for cities to establish rate ceilings for ambulance services

In rate-setting areas, ambulance rates tend to be lower than in less-regulated areas (OIG, 1987).

2.2 Medicare Coverage of Ambulance Services

Ambulance services are covered under Medicare Part B the supplemental medical insurance plan. According to the Medicare Carriers Manual, the use of an ambulance must be deemed medically necessary and appropriate. Scheduled transport in vehicles such as vans, buses, or taxis that are not equipped with basic lifesaving equipment and not staffed by persons trained in basic lifesaving techniques is not covered. Mileage is reimbursed only for "loaded" miles, that is when the patient is actually being transported in the ambulance.

An ambulance is a specially designed and equipped vehicle (automoble, boat, or plane) for transporting the sick or injured. It must have customary patient care equipment including a stretcher, clean linens, first aid supplies, oxgyen equipment and such other safety and lifesaving equipment as required by State or local authorities.

The ambulance crew must consist of at least two members. The crew charged with the care or handling of the patient must include one individual with adequate first aid training (i.e., training at least equivalent to that provided by standard and advanced Red Cross first aid courses).

In 1982, carriers were granted the right to establish separate payment screens for Advanced Life Support (ALS) services. The definition of ALS services is largely left to the carrier's discretion. However, the Medicare Carriers Manual (Section 5116.1B) provides these guidelines:

> An ALS ambulance has complex specialized life sustaining equipment for radio-telephone contact with a physician or a hospital. Typical of this type of ambulance would be mobile coronary care units and other ambulance vehicles that are appropriately equipped and staffed by personnel trained and authorized to administer IVs (intravenous therapy), provide anti-shock trousers, establish and maintain a patient's airway, defibrillate the heart, relieve pneumothorax conditions, and perform other advanced life support procedures or services such as cardiac (EKG) monitoring.

This definition focuses on the type of vehicle used, regardless of the services actually provided.

In keeping with the diversity of the industry, ambulance providers may bill Medicare in numerous ways:

- a standard base rate may be levied plus additional charges for mileage, supplies, night differentials, travel outside the normal service area, or services such as venipuncture or EKG monitoring;
- an all-inclusive base rate may be charged; or
- a rate may be based on mileage only.

The level of Medicare reimbursement for ambulance services is determined by the lowest of four payment screens: 1) the actual charge; 2) the ambulance provider's customary charge--based on the provider's own charge history; 3) the prevailing charge-defined as the 75th percentile of all customary charges in a given locality; or 4) the inflation-indexed charge, or IIC. This latter screen, introduced in October 1985, capped reasonable charges at 1985 levels for 1986 and has allowed price increases indexed to the urban consumer price index (CPI-U). Between 1985 and 1987 (the year used for the analysis of Medicare claims data in this report), the IIC constrained rate increases to 1.7 percent.

As in other Part B services, Medicare covers only 80 percent of the reasonable (i.e. allowed) charges determined by the above screen, with the beneficiary (excepting those

eligible for Medicaid) expected to pay the remaining 20 percent. A patient's liability may be greater than this if a provider chooses not to accept Medicare's allowed charge (known as accepting assignment). In this report, payments to ambulance suppliers are described in terms of allowed charges. This consists of the 80 percent paid by Medicare after the Part B deductible has been met and the 20 percent coinsurance payable by the beneficiary. This disregards additional amounts due to the supplier who does not accept assignment and may collect from the beneficiary the difference between the actual charge and the allowed charge.

2.3 Policy Issues

In 1987, Medicare allowed charges for ambulance services amounted to almost $602 million. Allowed charges for ambulance services has risen at an average annual rate of more than 20 percent since 1974 (OIG, 1987). This rate is twice that of medical inflation but comparable to increases in Medicare expenditures on physician services (Helbing, et al. 1991).

Several possible reasons for the rapidly increasing charges were mentioned in Section 2.1. These include the upgrading of standards in the industry, shifts in public and volunteer entity costs towards Medicare, and the shift towards ALS services. However, HCFA is also concerned about potential abuse in the system. For example, billing for services at a higher level of life support than is medically warranted was cited as one of the more common abuses of the Medicare program by suppliers of ambulance services.

There is also some concern that providers of ambulance services may be "gaming" the nonrestrictive billing system. In other words, as Medicare allows ambulance providers to bill separately for supplies, oxygen, and special services, such as endotracheal intubation and venipuncture, providers may increasingly be unbundling

their bills for a base ambulance trip for Medicare beneficiaries, adding to the overall rise in charges. Although wide variations in billing patterns among the carriers have been found in other studies (OIG, 1987), these have never been examined in depth.

Very little is also known about the characteristics of ambulance users. Along these lines, there is some concern that ambulances may be used even when a patient could have been transported by other means, since Medicare does not cover transport in other vehicles (e.g., vans, buses, taxis, etc.). As an example, dialysis patients have been shown to be high users of ambulance services (Eggers, 1990). There have been instances of patients being transported to renal dialysis centers in ambulances when other, less sophisticated, transport might have sufficed.

The Office of the Inspector General conducted a study in 1986 to investigate allegations that Medicare was paying unreasonably high amounts for ambulance services (OIG, 1987). They found that Medicare pays between ten and fifty percent more than the Veterans Administration, health maintenance organizations, and hospitals for BLS services. As this study did not hold factors such as input prices and level of service constant, however, the results may be misleading.

Despite this finding, the American Ambulance Association has countered that Medicare reimbursement is set at levels substantially below cost. One point of contention is the fact that carriers are not allowed to distinguish among subsidized and unsubsidized ambulance providers in establishing the prevailing charge screens. In addition, rural providers have argued that separate rates should be established that recognize the higher cost of providing services to rural areas. A study conducted for the Medi-Cal program, for example, found the average cost per run in a rural area was $115, while the comparable cost in an urban area was $79, (Department of Health Services, California, 1982). Regardless of ownership type and urban/rural location, many ambulance providers have voiced complaints that the IIC has held reimbursement far below legitimate cost increases in the industry.

In order to contain cost escalation in ambulance services, the OIG recommended that Medicare carriers apply inherent reasonableness criteria more stringently. These criteria allow carriers to adjust rates downward if charges do not appear to be economically justified. Of most salience for the ambulance industry, when the market for ambulance services is dominated by one, or a few, providers, for example, carriers could use these criteria to modify monopolistic pricing. The OIG also recommended the use of competitive bidding for Medicare ambulance services. Preferred provider models have been adopted by the Veterans Administration, some hospitals, municipalities and selected Medicaid programs.

Section 3: Medicare Claims Analysis

An analysis of Medicare claims for ambulance services is critical to address all three of the following major objectives of this study:

(1) to analyze aggregate spending and billing patterns for ambulance services provided under Medicare;

(2) to compare Medicare payment to costs by type of ownership, urban/rural location, and level of service; and

(3) to compare Medicare to Medicaid payment for ambulance services.

The first objective can be addressed solely through an analysis of Medicare claims data and is discussed in this section. The next two objectives require comparisons to the results of the Project HOPE Survey of Ambulance Providers and the survey of eight Medicaid programs, and are discussed later, in Sections 5 and 6, respectively.

3.1 Research Questions

A variety of research and policy interests within HCFA led to this component of the study. From the most global perspective, no detailed analyses of Medicare ambulance claims had ever been conducted. Even very basic information, such as how much Medicare was spending on ambulance services and how this was distributed across the United States, was not available.

Also, there was a more fundamental desire to gain insights regarding the appropriateness of Medicare payment policies for ambulance services. For example, considering the potential for providers to bill for a higher level of life support than medically warranted, which carriers were reimbursing for a high proportion of ALS runs? Also, given incentives to game the system, what effect does unbundling of

services have on the average Medicare reimbursement for an ambulance trip? While aggregate descriptive statistics can not indicate whether the level of life support used was medically warranted, or whether unbundling of services is economically justified, they can provide HCFA some notion of whether the observed variability is plausible and thus give some direction to policy initiatives or identify issues for further investigation. As mentioned in Section 2, HCFA had noted wide variations of billing practices among carriers. For administrative purposes, there was an interest in whether carriers were coding ambulance services properly, and how code use varied among carriers.

These multiple concerns resulted in a list of descriptive analyses that were incorporated into this study. These analyses addressed:

- Total Medicare allowed charges for ambulance services;
- The distribution of charges by procedure code;
- Local code usage related to ambulance services;
- Allowed charges for nonambulance services by ambulance providers;
- Allowed charges for ambulance services by nonambulance providers;
- Frequency and average allowed charges per trip by level of service;
- Characteristics of beneficiaries using ambulance services;
- Patterns in destination and origin of ambulance trips;
- Variations in assignment and charge reductions by carrier and urban/rural location; and
- Quality of the data.

Before presenting the findings of the Medicare claims analysis, the choice and construction of data files and the techniques used in analyzing the claims data are described. Then, a series of tables and explanatory text assess the quality of the Medicare claims data. Because this would be the first comprehensive examination of Medicare claims for ambulance services, there was some concern that the quality of the data would not support the proposed analyses. In addition to the research questions posed, the analysis of data quality was an integral part of this study.

3.2 Methodology

The first step of this component of the study was to select the data files to be analyzed. Once selected, several complex computational steps needed to be performed. First, ambulance services needed to be defined. This was particularly difficult due to the number of carrier-specific local codes used for billing ambulance services. The second major computational step involved defining an ambulance run by grouping claims for the same trip together. Then, claims were mapped into appropriate service levels: ALS, BLS, Air, and Undefined/Other. These steps are discussed below in more detail.

3.2.1 Choice of Data Files

As previously mentioned, ambulance claims are covered under the Medicare Part B program. Both summary and sample data on Part B claims are available in four separate files: 1) the Procedure File, a 100 percent summary of Part B claims arrayed by carrier and provider type; 2) the Beneficiary File, a five percent sample of Part B claimants; 3) the Provider File, a five percent sample of providers submitting Part B claims; and 4) the Prevailing Charge File, which presents the payment screens for each procedure by carrier and locality. Collectively, these are known as the Part B Medicare Annual Data Files (BMAD).

This report examines ambulance-related data on all four BMAD files for the year 1987. The types of questions that are best addressed by each file are mapped in Figure 3.1.

HCFA personnel prepared extract files of all four BMAD files. These extract files included all claims billed by Specialty 59 (ambulance providers) and all ambulance claims billed by Specialties 60 and 61 (Public Health or Welfare agencies, and Voluntary Health or Charitable agencies). Specialties 60 and 61 were included because it was thought that some ambulance providers (e.g., volunteer and/or municipal providers) might be classified under these specialties rather than under Specialty 59. Ambulance claims were defined as any records within the following three categories:

- all records in which a HCFA Common Procedure Code System (HCPCS) procedure code has a value from A0010 to A0999 (ambulance-related codes);
- all records in which the procedure code has a value of 99082 (unusual physician travel--related to an ambulance trip); and
- all records with any of the carrier-specific local codes charged by ambulance providers under Specialty 59. (Records from Specialty 60 or 61 providers using these local codes were also included.)

In order to evaluate the characteristics of ambulance users, all records from the Health Insurance Skeleton Write-Off files (or HISKEW--containing eligibility and demographic information) which matched identification numbers on the beneficiary ambulance extract file were also extracted to a separate data file for analysis.

Figure 3.1 Medicare Claims Files Used to Analyze Payment For Ambulance Services

o Total Medicare allowed charges for ambulance service	
o Allowed charges for ambulance services by procedure code	
o Local code usage related to ambulance service	
o Allowed charges for nonambulance services to ambulance providers	Procedure File
o Allowed charges for ambulance service to non-ambulance providers	
o Patterns in destination and origin of ambulance trips	
o Quality of data on the Procedure File	
o Frequency and average allowed charge per trip by level of service	
o Quality of data on the Beneficiary File	Beneficiary File
o Characteristics of beneficiaries using ambulance services	Beneficiary-MISKEW Linked File
o Variations in assignment and charge reductions	
o Quality of data on the Provider File	Provider File
o Quality of data on the Prevailing Charge File	Prevailing Charge F e

3.2.2 Defining Ambulance Services

Charges for ambulance services can be identified through billings by ambulance providers, coded under Specialty 59. Alternatively, charges can be identified through the use of HCPCS Level II codes (A0010-A0999) and HCPCS Level III codes (local codes) assigned by HCFA Regional Offices and/or Medicare Carriers. Physician charges for ambulance services are billed under the Physician's Current Procedure Terminology (CPT-4) code 99082.

This report primarily uses all claims submitted by ambulance providers, identified as Specialty 59, to estimate aggregate Medicare allowed charges for ambulance services. This approach, the simplest method for defining ambulance services, has two drawbacks. First, it includes some nonambulance charges since a small portion of claims submitted by Specialty 59 providers are not ambulance claims. Second, this method excludes the portion of Medicare ambulance charges accounted for by nonambulance providers, i.e., physicians, etc.

One other simple definition is to use charges for HCPCS Level II ambulance codes (A0010-A0999). One difficulty with this definition is the frequent use of local codes by some Medicare carriers. Local codes are carrier-specific Level III HCPCS codes. Originally, HCFA allowed carriers to develop specific local codes to account for rare situations in which regional variations in billing practices could not be incorporated into existing Level II HCPCS codes. However, some carriers have developed elaborate local codes for ambulance services.

Although Level III HCPCS codes, or local codes, represented only 12 percent of all Medicare allowed charges for ambulance services in 1987, the extent of local code use varied widely by carrier, with local codes in two carriers accounting for over 40 percent of allowed charges for services billed by ambulance providers. These figures

demonstrate that, while HCPCS Level II codes accounted for most ambulance claims in 1987, using HCPCS ambulance codes alone to define ambulance spending is not satisfactory, especially when making cross-carrier comparisons. Patterns of local code use by carrier are examined in more detail in Section 3.4.3.

To assess the validity of using Specialty 59 as a definition of ambulance spending, all codes were mapped as either ambulance or nonambulance-related codes. All HCPCS Level II ambulance codes (A0010-A0999) were categorized as ambulance-related. In addition, any codes (local or HCPCS) that could be mapped to the following categories were defined as ambulance claims: intubation, defibrillation, intravenous therapy, venipuncture, other vascular injection procedures, therapeutic injections, cardiopulmonary resuscitation, supplies, drugs, oxygen, unusual physician travel, transport of medical specimens, x-ray, or EKG. A listing of all HCPCS and local codes designated or excluded as ambulance-related services under this definition appears in Appendix A. Excluded codes cover nonambulance services and supplies such as: physician office visits, medical consultations in a hospital, wheelchairs, hospital beds, and transverse axial tomography. We also excluded local codes that were not defined by Medicare carriers.

Based on this mapping, nonambulance-related codes comprised only 0.9 percent of all claims paid to Specialty 59 providers. Similarly, only 0.9 percent of all ambulance claims in that year were paid to specialties other than 59. Claims made by Specialty 59, in conclusion, provide a reasonable estimate of total allowed charges for Medicare-covered ambulance services.

3.2.3 Defining an Ambulance Run

Defining an ambulance run involves grouping all claims for the same ambulance trip for the same beneficiary together. Analyzing Medicare allowed charges per run is

important in order to examine the impact of unbundling of services on claims and to compare average Medicare allowed charges to provider cost. A number of different HCPCS or local ambulance codes may be charged for a single ambulance run. This report defines an ambulance run as a one-way transport (indicated by a base rate) and any additional services provided to the beneficiary by the ambulance provider on the same day (indicated by add-on codes).

Base rates are typically designed to cover the average fixed cost to ambulance providers of furnishing one-way ambulance transport at a certain level of service. Add-on codes are designated for services such as mileage, oxygen, EKG monitoring, waiting time, and disposable supplies which may vary significantly from one run to another. Some base codes are all inclusive; this means that the rate specifically includes all add-on services. A mapping of codes as either base or add-on services is provided in Appendix A. For purposes of this report, all mileage codes have been classified as add-on services although a few carriers may reimburse ambulance providers only for mileage rather than use an ALS or BLS base rate.

Linking claims for the same beneficiary on the same date is sometimes difficult for two reasons. First, Medicare claims may reflect billing dates rather than the actual date of service. Second, more than one base rate may be charged to the same beneficiary on a given day (e.g., round trips). This creates problems in assigning add-on services to a particular run.

To minimize the problem with inaccurate dates of service, first-expense and last-expense dates were used to match base rates and add-on services. These dates appear more consistent than dates of service variables and are developed so that associated claims should have the same expense dates.

The second difficulty cited above is not easily avoided. In order to more accurately represent the cost of a one-way transport, this analysis of ambulance runs primarily focuses on cases in which there were no more than one base rate per day for a given beneficiary. Of the 220,221 base rates in the Beneficiary File, approximately three-fourths (161,436) could be accurately grouped with add-on services by this methodology. These "single base rate" ambulance runs accounted for 80 percent of allowed charges related to ambulance services in the 1987 Beneficiary File.

The remaining 58,785 base rates and associated claims could not be adequately defined as a run since these base rates are for beneficiaries with "multiple base rates" on the same date. These data imply that some persons were transported by ambulance twice in the same day, perhaps from home to one hospital and then to another hospital, or possibly round trip between a nursing home and a hospital. Comparisons of beneficiary characteristics across the "single" and "multiple" base rate groupings were conducted to explore how multiple run beneficiaries might differ from persons with one-way trips.

3.2.4 Defining Level of Service

The "HCPCS 1987 Manual" which includes descriptions of HCFA codes and CPT codes, and the "Part B Medicare Carriers Local Code Descriptions" were used to categorize ambulance codes into one of five service levels: ALS, BLS, air ambulance service, undefined, and other. Appendix A provides a listing of ambulance codes categorized by these service levels.

Some descriptions of HCPCS codes and local codes include the service level: e.g., A0221 is ALS mileage. Service levels for other codes could sometimes be inferred from the description. All base codes not clearly defined as ALS were considered to be for BLS services. Codes for patient transport by bus, taxi, etc. were categorized as

undefined since these services are not reimbursable under Medicare. Most of the remaining unmappable codes are, or appear to be, for additional services beyond those covered in a base rate. According to the 1987 Beneficiary file, ambulance codes which can be mapped into ALS, BLS, or air service categories once an ambulance run had been defined, account for over 99 percent of the total allowed charges for ambulance services under Medicare.

3.3 Quality of Claims Data

Prior to any indepth analysis of the Medicare claims data, a number of quality checks on the ambulance extract files were completed. These quality checks fell into at least one of three categories: 1) analyses to identify inconsistencies in ambulance charges across the various files, 2) analyses of ambulance charges to identify any wide variations across carriers that could not easily be explained, and 3) analyses of variables with missing or unorthodox values to identify coding problems in specific data fields.

The comparability of Medicare claims data across the various files was the initial quality issue for this analysis. The Procedure File represents a 100 percent sample of claims while the Provider File is only a five percent sample of providers. The Beneficiary File is a five percent sample of all Medicare beneficiaries plus a 100 percent sample of End Stage Renal Disease (ESRD) beneficiaries. These file differences make aggregate comparisons across files problematic and not very useful. To improve comparability, the 1987 Beneficiary File was reduced by eliminating all ESRD claims that would not otherwise have been included in a straight five percent sample.

Instead of comparing aggregate allowed charges, ambulance charge patterns across files were examined by analyzing average allowed charges for five select HCPCS Level II ambulance codes. BLS and ALS base rates and mileage were comparable

across data sources as demonstrated in Table 3-1, and appeared consistent with other data sources, including the Office of the Inspector General's report (OIG, 1987).

TABLE 3-1

Average Allowed Charge Across Files for Select HCPCS Codes

HCPCS Code	Description	Prev. Charge*	Proc File	Prov File	Benef File **
A0010	BLS Base Rate	$ 92	$ 81	$ 84	$ 83
A0020	BLS mileage per mile	$ 3	$ 4	$ 3	$ --
A0220	ALS Base Rate (Incl.)	$166	$159	$165	$148
A0221	ALS mileage per mile	$ 4	$ 3	$ 4	$ --

Source: Project HOPE calculations using the 1987 BMAD Files

* The Prevailing Charge File figures represent the average of the 75th percentile of an array of customary charges nationwide.

** The Beneficiary File figures represent a sample of the first 1,000 records on the file.

In general, these estimates are comparable and consistent with the average allowed charge just over $80 for a BLS base rate (A0010) and about twice that for an all-inclusive ALS base rate (A0220). Similarly, in all files, the average rates were either $3 or $4 per mile for both BLS (A0020) and ALS (A0221) runs.

The average rates for Puerto Rico and the Virgin Islands (P.R./V.I.) indicated problems with the quality of claims data from these localities. For example, the calculated average allowed charge for P.R./V.I. was $1,326 per BLS mile. In addition, other analyses also discovered problems with P.R./V.I. claims data. Due to doubts about the validity of ambulance claims data in P.R./V.I. in both the aggregate and on

average, claims data for these carriers were excluded from this analysis of Medicare claims.

Another quality consideration with the Medicare claims data was the range and standard deviation of allowed charges for select HCPCS procedure codes and the consideration of outliers. For example, although the Procedure File indicated an average allowed charge of $81 for a BLS base rate (A0010), the charge data ranged from just over two dollars to $471. In addition, the standard deviation (S.D.) for BLS base rates was $31, or more than one-third of the mean. Ranges and standard deviations for the other most common HCPCS ambulance codes are also large, as indicated in Table 3-2.

Cross-carrier differences in allowed charges for these procedure codes account for some, but not all, of this variation for selected HCPCS codes. Table C1 in Appendix C includes the minimum, maximum, standard deviation, and mean for the five HCPCS codes on a per carrier basis. While almost all carriers had standard deviations of less than $1.00 for mileage codes and S.D. less than $25 for base rates, large ranges and standard deviations occurred among Medicare claims for some individual carriers. For example, Mutual Medical Insurance of Indiana allowed an average charge of $2.35 for ALS mileage but rates ranged from a low of $1.31 to a high of $198 with a standard deviation equal to almost one-third of the mean. Similarly, Nationwide of Ohio had ALS inclusive and non-inclusive base rates ranging from $6 to $472 and from $13 to $420, respectively.

maximum BLS mileage case, the allowed charges of $206 were divided by the MTUS value of 1 mile to reach an estimated per mile rate of $206. In this and similar cases of 1-mile ambulance trips, it is assumed that either the MTUS incorrectly stated the number of miles traveled or the charge actually referred to a base rate rather than a mileage charge. These problems were more prevalent for the carriers in Washington and Oregon. For presentation of code-specific average allowed charges, outliers were removed. They accounted for approximately 5 percent of allowed charges. However, since aggregate ambulance spending was not affected by these data quality problems, these outliers were not removed for aggregate analyses.

A fourth major quality consideration was the adequacy of the sample size in the Provider File. Since this file only includes a five percent sample of providers, it was unclear whether the provider data would be sufficient to identify significant urban/rural differences and assignment rate patterns across carriers. The 1987 Provider File included 677 ambulance providers, 330 urban and 347 rural, where rural is defined as any location outside a Census Metropolitan Statistical Area (MSA). Unfortunately, this sample was not large enough to compare differences among the carriers. In addition, this five percent sample of providers was insufficient for linking Medicare claims data with the four-state provider survey described in Section 4. For example, only 32 Texas providers were included in the claims data and 11 of these providers were designated as rural. When these 32 Texas providers were matched to data from the Survey of Ambulance Providers, only 5 providers were found in both data sources. Similarly, of the 15 Michigan providers in the Medicare claims data, only 3 also responded to the Provider Survey. As indicated by Table 3-3, similar small samples of providers in Medicare claims data were found for the remaining carriers in the four-State provider survey. Consequently, the relationship between Medicare allowed charges and provider costs could not be adequately examined by directly linking the common providers in these two data sources.

TABLE 3-3

Number of Providers in the BMAD Provider File
for States in the Provider Survey

State	Urban	Rural	Total
California	15	4	19
Massachusetts	11	1	12
Michigan	6	9	15
Texas	21	11	32

Source: Project HOPE calculations using the 1987 Provider File

The fifth main data quality consideration was evaluating the percent of missing values in Medicare ambulance claim records. The largest quality problem in this area was the lack of modifiers which identify the origin and/or destination of ambulance runs. Modifiers are two-letter variables defined by HCFA or Medicare carriers; a list of modifiers and their definitions is provided in Appendix B. A significant number of carriers do not include modifiers in their ambulance claims data. Over half of all records with ambulance base rates do not include modifiers. Consequently, it is difficult to get an overall picture of the use of ambulance services by beneficiaries in different settings, i.e., hospital, nursing home, and community residents.

Finally, prevailing charge rates for select HCPCS codes were compared to average Medicare allowed charges in order to assess the quality of the prevailing charge file. As noted in Section I, a fee screen was introduced in 1986 known as the inflation-indexed charge, or IIC. This screen was based on the lowest pricing screen in the previous year and a restrictive inflation factor. Between 1985 and 1987, this screen

allowed prices to rise less than two percent. Due to the constraining effect of this screen, it is likely that the IIC was the relevant fee screen used by most carriers in setting charges for ambulance services. The Prevailing Charge File does not include information on the IIC. The 75th percentile of customary charges is the only relevant pricing screen included in this file. In general, there were numerous data quality problems with this file. These are highlighted in the following discussions.

Table C2 (Appendix C) presents an array of prevailing charges and average Medicare allowed charge for four HCPCS codes (A0010, A0020, A0220, and A0221) by carrier. Information is missing on this file for seven carriers including the one covering railroad retirees and those representing the States of: Florida, Tennessee, Michigan, Wisconsin, Kansas, and Hawaii. In addition, prevailing charge screens of zero were listed for at least one of the four codes in Blue Shield of Western New York and carriers in the states of Maryland, South Carolina, Iowa, Missouri, and Nebraska. Missing values are represented by a dash in the table, so it is unclear what the zero value indicates.

Several carriers had missing values for ALS rates. Often these were in areas where Medicare did not reimburse any claims for the selected codes. However, carriers in Rhode Island, Delaware, Pennsylvania, Mississippi, Montana, Utah, and Nevada were missing prevailing charge rates for the ALS base code, despite having reimbursed for this particular procedure code in 1987.

Although variations in the spread between prevailing charges and allowed charges are expected, due to the four different charge screens carriers use, prevailing charge screens were actually lower than average allowed charge in nine carriers (Massachusetts, West Virginia, Mississippi, Ohio, Texas, Kansas, Arizona, Nevada, and Oregon). In Nevada, the average allowed charges for the BLS base rate (A0010) was nearly twice as high as the 75th percentile of prevailing charges. On the other end of the scale,

average allowed charge for the BLS base rate was only 30 percent of the prevailing charge for the carrier in Alaska. In general, however, average allowed charges was roughly sixty to eighty percent of the prevailing charge screen, a range that seems reasonable.

3.4 Descriptive Analyses

The following text and figures summarize the results of the descriptive Medicare claims analysis. Additional large tables are included in Appendix D and are referred to in this section as Tables D1 through D8.

3.4.1 Total Medicare Ambulance Spending

Total allowed charges for Medicare ambulance services, defined as claims from Specialty 59 providers, equalled $601.7 million in 1987. This total is broken down by region and by carrier in Table D1. Regional ambulance spending ranged from $11.3 million in Region VIII (Colorado, Montana, North and South Dakota, Utah, and Wyoming) to $116.8 million in Region V (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin). Allowed charges per carrier varied from a low of $107,142 at Alaska's Aetna to a high of almost $53 million at Pennsylvania Blue Shield and California Physicians Service. Altogether, carriers in eight States accounted for nearly 60 percent of Medicare allowed charges for ambulance services. By percent of total, the leading States were: California (15.5), New York (8.9), Pennsylvania (8.8), Massachusetts (6.9), Ohio (6.1), Michigan (4.7), Texas (4.6), and Florida (4.3).

As shown in Table 3-4, the bulk of Medicare's allowed charges for ambulance services in 1987, or an estimated $487 million, was for services rendered in a BLS support trip (81 percent). An estimated $115 million was for ALS services, and $241,000 for air ambulance services. Because air ambulance services comprised such a

small percent of total ambulance use under Medicare (.04 percent), this report has focused primarily on ground transport. (The distribution of allowed charges by level of service is examined in greater detail in Section 3.4.6.)

The use of ambulance services was also concentrated on beneficiaries residing in urban areas (an estimated $483 million, or 80 percent of total allowed charges). While this is somewhat reflective of the urban concentration of the Medicare population (approximately 73 percent lived in urban areas in 1987) other factors contribute to higher urban spending (see especially Section 3.4.7 and Section 4.0). Because urban and rural differentials are germane to address the issues raised by the legislative mandate for this report, they are examined whenever possible.

3.4.2 Allowed Charges for Ambulance Services by Procedure Code

Much of the spending for ambulance services can be accounted for by relatively few codes. The twelve HCPCS codes accounting for the largest proportion of total allowed charges are listed in Table 3-5. Allowed charges for BLS base rates (A0010) and BLS mileage (A0020) were $271.9 million and $84.1 million, respectively. Inclusive ALS base rates (A0220) accounted for almost $72.8 million and return trip transports (A0222) were responsible for $25.4 million in allowed charges in 1987. These four codes (A0010, A0020, A0220, and A0222) accounted for over three-fourths of ambulance spending.

Table 3-4 Summary of Medicare Allowed Charges for Ambulance Services, 1987

	Allowed Charges	Percent
Total	$601,743,000	100.00%
Level of Service		
ALS	$114,933,000	19.10%
BLS	$486,568,000	80.86%
Air	$ 241,000	0.04%
Location		
Urban	$482,902,000	80.25%
Rural	$118,841,000	19.75%

Note: Estimates based on applying number of runs and average allowed charge per run obtained from the 1987 BMAD Beneficiary File to aggregate charge data from the 1987 BMAD Procedure file. All multiple trips in one day were assumed to be basic life support.

Table 3-5. Allowed Charges by Procedure Code, U.S. Total, 1987

HCPCS Code	Description	Allowed Charges	Percent	Cumulative Percent
A0010	BLS, Base Rate, One Way	$ 271,924,054	45.6%	45.6%
A0020	BLS, Per Mile, One Way	84,941,922	14.1%	59.8%
A0220	ALS, Base Rate, Inclusive	72,758,003	12.2%	72.0%
A0222	Ambulance Service Return Trip, Transport	25,396,900	4.3%	76.2%
A0150	Nonemergency Transport, Base Rate, One Way	20,674,658	3.5%	79.7%
A0223	ALS, Base Rate, Noninclusive	20,588,219	3.5%	83.2%
A0070	Ambulance Services, Oxygen	15,182,182	2.5%	85.7%
A0221	ALS, Per Mile, One Way	9,119,435	1.5%	87.2%
A0999	Misc. Ambulance Service	2,183,660	0.4%	87.6%
93005	Electrocardiogram	1,479,244	0.2%	87.8%
A0100	Nonemergency Transport: Taxi, Intracity	1,131,316	0.2%	88.0%
A0215	Ambulance, Misc. Disposable Supplies	1,011,327	0.2%	88.2%
-----	Other	75,818,463	12.61%	100.0%
-----	Total	601,409,383	100.0%	

Note: Excludes Puerto Rico/Virgin Islands data.

Source: Project HOPE Calculations from 1987 BMAD Procedure File.

Procedure codes are listed by descending order of allowed charges by carrier in Table D2. For most carriers, more than 70 percent of allowed charges in 1987 could be accounted for by two codes: A0010 (Base Rate. BLS); and A0020 (BLS. per mile). This proportion was higher in the Northeast (often around 90 percent) than in the West (often around 60 percent). In the latter, ALS codes were used more frequently. Some carriers deviated from this norm by using alternative codes for BLS runs. For example, carriers in the states of Alabama, Texas, and Kansas predominantly used code A0150 (nonemergency ambulance transport). The carrier in Ohio and the carrier for railroad retirees also frequently used this code. The code designating a return ambulance trip (A0222) was frequently used by carriers in the states of Ohio, Tennessee, and Texas. As discussed in more detail in the next section, local codes were used by Empire Blue Cross/Blue Shield in New York and Occidental Life in California.

There appeared to be some evidence of ambulance-related coding problems in particular carriers. As shown in Table 3-5, miscellaneous ambulance services (A0999) and nonemergency transports by intracity taxis (A0100) were responsible for $2.2 million and $1.1 million in allowed charges, respectively. The latter is not reimbursable under Medicare. Seven carriers accounted for 72 percent of all allowed charges for miscellaneous ambulance services (A0999). These carriers, in descending order of the charges for this code, were: Nationwide of Ohio ($376,691); Mutual Medical Insurance of Indiana ($318,055); Travelers for Railroad Retirees ($272,372); Group Medical and Surgical of Texas ($187,907); Nationwide of West Virginia ($163,754); Pennsylvania Blue Shield of Pennsylvania ($146,853); and Washington Physicians' Service of Washington state ($120,559). (These data are not shown in a table.) South Carolina alone accounted for over 99 percent of all allowed charges for nonemergency taxi transports (A0100).

Apart from mileage, oxygen accounted for the most spending for add-on services among the carriers (Table 3-5). Other add-on services rarely accounted for more than

two percent of total ambulance charges for a particular carrier (data not shown). Exceptions to this were add-ons for night differentials, which were common among carriers in the states of Maryland, Texas, and California, and add-ons for EKG monitoring, for carriers in the states of Alabama, South Carolina, Illinois, Texas, Kansas, and Missouri. Miscellaneous disposable supplies accounted for more than four percent of ambulance spending by the carrier in Colorado.

Charges for air transport was rare. However, air transport was important for carriers in the states of Montana, Wyoming, and Alaska, accounting for five to eight percent of total allowed charges.

For cross-carrier comparisons, five common procedure codes accounted for a large portion of ambulance spending: A0010 (BLS base rate), A0020 (BLS mileage), A0220 (inclusive ALS base rate), A0221 (ALS mileage) and A0223 (noninclusive ALS base rate) were selected. Average allowed charge per carrier for each of these codes are presented in Table D3. The minimum, maximum, standard deviation, and mean allowed charge per carrier for each of these procedure codes is presented in Table C1 in Appendix C.

Average allowed charge for a BLS base rate ranged from a low of $45.55 for the carrier serving the State of North Carolina to a high of $129.98 at Group Health of New York. In addition to regional cost differences, Group Health of New York's BLS base rate may be somewhat higher to incorporate mileage reimbursement since they did not reimburse separately for BLS mileage. All other carriers reimbursed for BLS mileage with rates ranging from $1.20 for the carrier serving Mississippi to just over $5.00 in Massachusetts and California.

All carriers allowed higher charges for ALS base rates than for BLS base rates. Most ALS claims (70 percent) were for the all-inclusive ALS base rate code (A0220)

(calculated from Table C1). Average allowed charge for inclusive ALS base rates ranged from $56.59 for the carrier in South Carolina to $284.85 for the carrier serving the state of Oklahoma. Most likely because claims submitted for the non-inclusive ALS base rate (A0223) represented different ambulance firms, inclusive rates were not consistently above noninclusive rates.

Average allowed charge for ALS mileage ranged from $1.18 for the carrier in Missouri to $5.88 for the carriers in Massachusetts. Of the carriers not using the ALS mileage code A0221, seven used only the ALS inclusive base rate. The remaining two carriers with no allowed charges for ALS mileage may have paid for ALS mileage at the BLS mileage rate.

3.4.3 Use of Local Codes

As shown in Table D4, local codes represented 12 percent of all Medicare allowed charges for ambulance services. The extent of local codes used by carriers ranged from zero to nearly 70 percent of a carrier's total ambulance spending. The following six carriers did not use any local codes in billing ambulance services: Blue Shield of Rhode Island, Prudential of New Jersey, Blue Shield of Florida, Equitable Life Insurance of Wyoming, Aetna Life and Casualty of Hawaii, and Equitable Life Insurance of Idaho. Another four carriers had less than $1,000 in allowed charges for ambulance-related local codes.

In contrast, Empire Blue Cross/Blue Shield of New York and Occidental Life in California billed 69 percent and 44 percent, respectively, of their ambulance spending in local codes. Nationally, carriers in New York, California, and Oregon accounted for over 82 percent of allowed charges for local codes billed by ambulance providers in 1987.

3.4.4 Charges for Nonambulance Services by Ambulance Providers

A total of $5.5 million in allowed charges for nonambulance codes was charged by ambulance providers (denoted as Specialty 59 providers). This represents only 0.93 percent of the $601.7 million that Medicare deemed as allowable charges for ambulance services in 1987. The types of nonambulance codes charged by Specialty 59 providers are listed in Table 3-6. Over $4.7 million of these allowed charges, or 85 percent, were for undefined local codes charged by ambulance providers. Undefined local codes were considered to be for "nonambulance" services since they could not be attributed to specific types of ambulance services. However, it is likely that at least some of these undefined local codes represent billings for ambulance services. Consequently, including undefined local codes in the definition of nonambulance services may overestimate the total nonambulance charges by ambulance providers. The second largest group of nonambulance codes charged by ambulance providers was for durable medical equipment which accounted for almost 11 percent of nonambulance expenditures in this analysis.

Nonambulance charges by ambulance providers were concentrated in a few carriers. Table D5 presents allowed charges for nonambulance services by ambulance providers on a per carrier basis. Nearly three-fourths of all nonambulance spending in 1987 was accounted for by two carriers: Nationwide of Ohio (61 percent and the Travelers in Connecticut (12 percent). None of the remaining carriers accounted for more than four percent of nonambulance spending.

Table 3-6. Medicare Allowed Charges for Nonambulance Services by Ambulance Suppliers, 1987

Category	Allowed Charges	Percent of Total
Undefined Local Codes	$ 4,736,236	85.30%
Durable Medical Equipment	602,541	10.85%
Canula	128,305	2.31%
Breathing Circuits	101,400	1.83%
Hospital Bed, total electric	59,155	1.07%
Hospital Bed, with siderails	45,627	0.82%
Wheelchair	39,446	0.71%
Variable Concentration Mask	30,630	0.55%
Oxygen Concentrator	17,550	0.32%
Physician Visit	40,495	0.73%
Critical Care	34,034	0.61%
Psychiatric Procedures	23,774	0.43%
Orthotics	17,099	0.31%
Radiology	8,247	0.15%
Surgery	8,038	0.14%
Ophthalmology	7,526	0.14%
Prosthetics	5,046	0.09%
Pathology	2,091	0.04%
Other	67,273	1.21%
Total	5,552,400	100.00%
Percent of Total Allowed Charges for Ambulance Services		0.93%

Note: Procedure code mapping to general categories is listed in Appendix.

Source: Project HOPE Calculations from 1987 BMAD Procedure File

3.4.5 Allowed Charges for Ambulance Services by Nonambulance Providers

In 1987, Medicare allowed $5.3 million in charges for ambulance services provided by suppliers other than Specialty 59. This represents 0.9 percent of total Medicare allowed charges for ambulance services. The types of suppliers, other than Specialty 59, providing ambulance services and the respective allowed charges per type are presented in Table 3-7. Providers listed as Specialty 99 (Unknown Specialty) accounted for slightly more than half of Medicare's allowed charges for ambulance related services by providers other than Specialty 59. Providers identified as Specialty 87 (All Other) and 88 (Unknown Suppliers) accounted for almost 30 and 15 percent, respectively, of all allowed charges for ambulance related services by non-ambulance providers. These three specialty codes do not necessarily imply than the providers of these ambulance services were not ambulance providers. Since specialty codes 99, 87, and 88 are more general categories for unknown or other suppliers, some of these providers may be ambulance providers that were correctly, or incorrectly, coded in specialties other than 59.

The distribution of allowed charges for ambulance related services provided by providers other than specialty 59 is shown in Table D6 by region and carrier. Oregon alone accounted for half of total allowed charges on ambulance-related services provided by suppliers other than Specialty 59. Washington was the second highest carrier with almost 19 percent and Virginia was third with 12 percent of the charges allowed. No other carriers accounted for more than 4 percent of allowed charges for ambulance services provided by nonambulance suppliers.

Table 3-7. Medicare Allowed Charges for Providers Other than Specialty 59, 1987

Provider Type (Specialty Number)	Allowed Charges	Percent of Total
Unknown Specialty (99)	2,725,132	51.4%
All Other (87)	1,575,418	29.7%
Unknown Supplier (88)	768,262	14.5%
Clinic or Other Group Practice (70)	180,168	3.4%
Miscellaneous	52,391	1.0%
Total	5,301,371	100.0%
Total Allowed Charge for Ambulance Related Codes	601,416,919	
Allowed Charges Providers Other Than Specialty 59 as a Percent of Total Allowed Charges for Ambulance Related Codes		0.9%

Source: Project HOPE Calculations from 1987 BMAD Procedure File

Note: Ambulance services include allowed charges for all ambulance codes listed in Appendix A. This differs from the primary definition used in this report of charges allowed to Specialty 59. See Section 3.2.2 for an explanation.

The top six carriers in terms of ambulance-related charges for providers other than Specialty 59 are listed in Table 3-8 along with the codes accounting for the greatest proportion of these charges. For example, Oregon allowed charges of almost $2.7 million on ambulance-related services provided by specialties other than 59 but one local oxygen code was responsible for 96 percent of these charges. A different local code accounted for the majority of ambulance spending for nonambulance suppliers in all of the top five carriers in Table 3-8. Only Illinois, with almost $91,000 in ambulance-related charges paid to nonambulance suppliers, reimbursed providers other than Specialty 59 for level II HCPCS ambulance codes.

3.4.6 Frequency and Average Charge Allowed Per Trip by Level of Service

In 1987, approximately 4.4 million ambulance trips were provided to Medicare beneficiaries. Claims could be grouped into unique runs in order to analyze the number of runs and the average allowed charge by level of service for approximately 73 percent of these runs (see Section 3.2.3 for a more detailed discussion). This discussion pertains only to those uniquely-identified runs. Fewer than one percent of these could not be identified by level of service.

Average allowed charge per trip by level of service is presented by carrier and region in Table D7. Allowed charges for an ALS run were, on average, 75 percent higher than that for a BLS run ($202 compared to $115). As noted earlier, most carriers reimbursed for both levels of service. Exceptions were the carriers in New Jersey and Maryland and Group Health of New York, which reimbursed only for BLS runs.

As noted in the table, wide variation existed across carriers. Allowed charges for BLS runs ranged from a low of $56 in West Virginia, to a high of $189 in

Table 3-8. An Analysis of Carriers Accounting for the Majority of Ambulance Related Charges Billed by Providers Other Than Specialty 59

Carrier Number	State	Allowed Charges
01380	Oregon	$2,692,532
	Oxygen Concentrator (Local Code Y0155)	2,591,119
00930	Washington	990,554
	Medicare, Secondary Payment., (Local Code W5700)	963,026
10490	Virginia	659,061
	Miscellaneous Medical Service (Local Code W9999)	645,314
00690	Maryland	197,866
	POU Liquid Oxygen (Local Code W8013)	191,885
00900	Texas	91,991
	Suction Catheters in Ambulance (Local Code Y5102)	84,442
00621	Illinois	90,644
	AMB Codes (A0010, A0020, A0070, A0215, A0220, A0999)	78,361

Source: Project HCFA Calculations from 1987 BMAD Procedure File.

Massachusetts. ALS allowed charges varied from $60 in Washington, D.C. to a high of $344 in Oklahoma. Almost all of the runs that were not identifiable by level of service occurred in South Carolina. The average allowed charge for runs not identified by service level was $80.

Within carriers, allowed charges also ranged widely as evidenced by the coefficient of variation (CV), the percent of the mean represented by the standard deviation. The CV often equaled 50 percent or more of the mean. Some of this variation seems reasonable and could be explained by the diversity of billing practices among ambulance providers. Evidence from the Survey of Ambulance Providers, discussed in Section 4, indicates wide ranges in charges. Some providers charge only nominal fees while others charge upwards of $500 for an ALS run. Nevertheless, the data are suspect in the carriers serving the states of Pennsylvania and Louisiana where the CV exceeded 100 percent.

The Northeast (Region I) and the West Coast (Regions IX and X) were clearly high charge regions, with both BLS and ALS runs averaging significantly higher charges than other regions. In terms of mix of service levels, however, the Northeast primarily relied upon BLS runs while regions in the west (Regions VIII, IX, and X), most frequently resorted to ALS runs. Carriers with a high percent of ALS runs (25 percent more) served states that include: New Mexico, Texas, Kansas, Michigan, Colorado, Arizona, California, Idaho, and Oregon. Nearly 60 percent of all ambulance runs reimbursed by the carrier in Michigan and 45 percent of all ambulance runs reimbursed by California Physicians' Service were ALS.

The charge differential between ALS and BLS runs was slightly greater in areas that had a high percent of ALS runs to total. For example, in New England (Region I), where ALS runs accounted for only 2.4 percent of total runs, the allowed charge for an average ALS trip was 42 percent more than an average BLS trip. On the other hand,

average ALS trip was 42 percent more than an average BLS trip. On the other hand, in Region IX (which includes California) where ALS runs comprised more than 35 percent of the total, carriers allowed charges that were 84 percent more, on average, for an ALS as opposed to a BLS run.

One issue of concern is the impact that unbundling of services has on the overall price of an ambulance trip. That is, what is the average amount that add-on services, such as mileage, oxygen, EKG monitoring, and supplies, contribute to the price of an ambulance trip? This issue can be assessed by comparing the allowed charge for standard base codes (A0010--BLS base rate--and A0223--ALS base rate) to these average trip prices (shown in Table D8). In general, add-on services add 42 percent to the price of a BLS trip ($115 compared to $81) and 74 percent to the price of an ALS trip ($202 compared to $116).

This differential between the BLS base rate and the average allowed charge for a BLS trip varies among the carriers. Mileage is undoubtedly the most important factor contributing to this differential, with Kansas and Wyoming among those carriers with the highest differentials (73 and 98 percent above base rate reimbursements, respectively). The importance of mileage to overall charges was underscored in an earlier comparison of allowed charges by procedure code (Table 3-5). Charges for the primary BLS mileage code (A0020) accounted for $84 million of the $601.7 million Medicare reimbursed to ambulance providers. This was second only to reimbursement for the most commonly-used BLS base rate code (A0010). In a pretest of our definition of an ambulance run, the importance of mileage to the overall charge for an ambulance trip was also underscored. Based on a nonrandom sample of cost outliers, two runs with charges of more than $1,000 were analyzed. In both cases, the distance covered in the trip was nearly 200 miles. Mileage charges exceeded $900 in both instances.

As discussed in Section 3.4.2, most carriers use an all-inclusive rate in reimbursing for ALS services. Caution must be exercised in making comparisons for ALS rates since the charge of inclusive rate trips has been included in calculating the overall average charge for an ALS trip. However, four of the carriers that use the noninclusive ALS base rate allowed, on average, more than twice as much for an ALS trip as for the ALS noninclusive base rate. These carriers served the states of Massachusetts ($259 vs. $121), Maine ($199 vs. $95), Virginia ($128 vs. $43), Ohio ($275 vs. $81), Arkansas ($188 vs. $65), and Louisiana ($239 vs. $115).

3.4.7 Characteristics of Beneficiaries Using Ambulance Services

As noted earlier, a separate analytic file was created that included uniquely-identified ambulance runs in order to analyze allowed charges by level of service (representing 73 percent of all runs in 1987). The characteristics of those users of ambulance services that received no more than one run in the same day are presented in Table 3-9. Persons aged 75 or older and persons residing in the Northeast (Region I) were substantially more likely to use ambulance services among this group (102 and 92 users per thousand beneficiaries, respectively, compared to 62 per thousand for Medicare as a whole).

Although the number of runs per user was relatively consistent across population groups (averaging 1.66), persons with end-stage renal disease averaged more than three times the norm (5.42 runs per user). These persons also had relatively more costly ambulance runs ($196 compared to the average of $129). As a result, allowed charges

Table 3-9. Characteristics of Users of Ambulance Services, 1987

Characteristics	Users		Ambulance Runs			Allowed Charge		
	Number	per Thousand Beneficiaries	Total (Thousands)	Runs per User	per Thousand Beneficiaries	per User	per Run	per Thousand Beneficiaries
Sex								
Male	755,720	58	1,233	1.63	95	$217	$133	$12,598
Female	1,187,000	65	1,996	1.68	110	$212	$126	$13,870
Age*								
<65	161,200	51	252	1.78	90	$258	$145	$13,093
65 - 74	544,880	33	846	1.55	52	$213	$137	$7,080
75 +	1,220,760	102	2,071	1.70	172	$210	$124	$21,331
Eligibility Category*								
OASI**	1,765,920	62	2,907	1.65	103	$210	$127	$13,065
Disability**	130,940	48	220	1.68	81	$230	$137	$11,137
Renal	7,940	63	43	5.42	341	$1063	$196	$66,967
Region***								
I-Boston	159,960	92	307	1.92	177	$319	$166	$29,417
II-New York +	---	--	---	---	---	---	---	---
III-Philadelphia	226,820	69	453	2.01	138	$254	$126	$17,396
IV-Atlanta	373,700	64	580	1.55	99	$136	$88	$8,733
V-Chicago	403,180	70	685	1.70	119	$197	$116	$13,773
VI-Dallas	196,600	66	335	1.70	112	$223	$131	$14,674
VII-Kansas City	98,640	59	149	1.51	89	$152	$101	$8,970
VIII-Denver	44,620	58	62	1.39	81	$205	$147	$11,883
IX-San Francisco	208,600	58	291	1.40	81	$290	$208	$16,905
X-Seattle	65,540	63	94	1.43	90	$251	$175	$15,826
Railroad	61,500	75	106	1.72	129	$208	$121	$15,524
Location								
Urban	1,469,420	65	2,484	1.69	110	$227	$134	$14,818
Rural	473,380	57	746	1.57	89	$173	$110	$9,854
U.S. Total	1,942,800	62	3,229	1.66	106	$216	$129	$13,340

* Category was unknown for 1.9 percent of claimants.

** Excludes persons with End Stage Renal Disease.

*** Beneficiary enrollment by region excludes health maintenance organization enrollees.

+ Data not shown due to the low numbers of defined runs in the region.

Source: Project HOPE Calculations from the 1987 BMAD Beneficiary File and Medicare Statistical Reports. Data presented include only single trip runs.

per thousand beneficiaries was substantially higher for persons with end stage renal disease ($66,697) than for the Medicare population in general ($13,340). ESRD patients were also more likely to receive more than one ambulance run in a given day, as is discussed later.

Users residing in Region I (New England) averaged 1.92 ambulance runs and incurred average allowed charges per run of $166; nearly thirty percent higher than the average across Medicare. Allowed charges per 1,000 beneficiaries residing in this region, as a result, were more than twice as high as the Medicare average ($29,417 compared to $13,340). Persons residing in urban areas were more likely to use ambulance services than those residing in rural areas (65 as opposed to 57 users per 1,000 beneficiaries), averaged more trips per user (1.69 compared to 1.57), and had more costly ambulance trips ($134 compared to $110, on average). All of these factors combined led to allowed charges per 1,000 urban beneficiaries ($14,818) which were 50 percent greater than for rural beneficiaries ($9,854).

As a corollary, use rates were lowest in the more rural regions of the Midwest and West (Region VII, VIII, and IX). However, average reimbursement per run was higher than the overall Medicare average in two of these regions (Regions VIII and IX--served by carriers in Denver and San Francisco). Subsequently, Medicare reimbursement per beneficiary served by these carriers was somewhat higher than the norm.

Approximately 1.1 million ambulance runs were provided to Medicare beneficiaries that received more than one run in a single day (Table 3-10). Although these multiple run users were predominantly nonESRD beneficiaries (98 percent), use rates were substantially higher among ESRD claimants (at 41.1 individual trips per user compared to 3.4 runs per user for nonESRD patients). Altogether multiple run trips accounted for 27 percent of all ambulance runs provided to Medicare beneficiaries. The average

charge per trip of $88 was substantially lower than that for single trip users ($214). A summary of the characteristics of these users is presented below:

TABLE 3-10
Characteristics of Users That Receive Multiple Trips in a Day

Eligibility Category	Number of User	Number of Runs	Runs Per User	Average Allowed Charge
ESRD	5,140	212.000	41.1	$93
Other	287,620	964,000	3.4	$88
Total	292,760	1,176,000	4.0	$88

Source: Project HOPE calculations using the 1987 Beneficiary File.

When analyzing both single and multiple trips together, persons with ESRD used services at ten times the rate of non-ESRD ambulance users. In 1987, persons with ESRD received 18.7 trips per claimant compared to 1.9 trips per claimant for the non-ESRD Medicare population.

3.4.8 Patterns in the Origin and Destination of Ambulance Trips

The origin and destination of ambulance trips can be ascertained from BMAD claims data through the use of modifiers. Modifiers are two-digit alphanumeric codes, the first letter indicating the origin of an ambulance trip and the second indicating the destination. In addition to the use of local procedure codes, carriers may also produce carrier-specific modifiers. For this analysis, local modifiers were mapped to HCPCS modifiers, when possible. A detail of the mapping is provided in Appendix B.

Many carriers do not use modifiers. These carriers include: all those in the Boston, Atlanta, and Dallas regions, New Jersey, Group Health of New York, Virginia, Minnesota, Iowa, Kansas, Nebraska, Hawaii, Occidental Life of California, Idaho, and Railroad. Nearly 61 percent of ambulance runs could not be classified by origin and destination (accounting for just over half of allowed charges for ambulance services).

Of those that could be classified, a clear pattern emerges that is not unexpected (See Table 3-11). More than seventy percent of all trips go to a hospital. Most of these originate from the beneficiary's home, although a large number also originate from physicians' offices or an extended care facility or nursing home (ECF/NH). The next highest number are those trips that originate from a hospital (32.7 percent of all classifiable trips). These are largely destined to the beneficiary's home, or an extended care facility or nursing home. There is some concern about the potential to abuse ambulance services from a beneficiary's home to an ECF/NH or from an ECF/NH to destinations other than the hospital. Altogether these trips accounted for less than 3 percent of the total.

Table 3-11. Origin and Destination of Ambulance Trips

From	To	Number	Percent
Home	Hospital	870,247	43.0%
ECF/NH	Hospital	387,193	19.1%
Hospital	Home	282,479	13.9%
Hospital	ECF/NH	260,591	12.9%
Hospital	Hospital	119,243	5.9%
Home	ECF/NH	39,390	1.9%
Scene	Hospital	38,550	1.8%
Physician's Office	Hospital	14,997	0.7%
ECF/NH	ECF/NH	4,707	0.2%
ECF/NH	Home	4,632	0.2%
ECF/NH	Physician's Office	2,980	0.1%
Other		3,152	0.2%
Total		2,028,161	
Unclassified		3,154,589	
Percent of All Trips Unclassified			80.9%

Note: Due to sample differences the number of runs are not comparable to estimates produced from the Beneficiary file.

Source: Project HCFA calculations from 1987 BMAD Procedure File

Table 3-12. Allowed Charges per Trip by Origin and Destination of Ambulance Trip

From	To	Average Allowed Charges Per Trip
Hospital	Hospital (Round Trip)	$ 151
Hospital	Home	126
SCF/NH	SCF/NH	120
Hospital	SCF/NH	119
Hospital	Hospital	119
SCF/NH	Hospital	104
Home	Hospital	103
Scene	Hospital	102
SCF/NH	Home	100
Physician's Office	Hospital	99
SCF/NH	Physician's Office	88
Home	SCF/NH	62
Total		$1,293.00

Source: Project HOPE calculations from 1987 BMAD Procedure File

Table 3-12 presents average allowed charges by origin and destination. The most expensive trips carry patients from the hospital setting. By far the most expensive is interhospital transfer, most likely transporting critically ill patients to receive specialty services at another hospital ($151). Trips from one ECF/NH to another are also among the most expensive. The least expensive trips are those originating from a beneficiary's home to an ECF/NH ($62).

3.4.9 Variations in Assignment and Charge Reductions

Ambulance providers have the option of deciding, on a claim-by-claim basis, whether to bill Medicare and accept its allowed charges (less the 20 percent patient co-payment) as payment in full (i.e., accept assignment) or to directly charge the ambulance user if that price exceeds Medicare's allowed charge. While ambulance providers have a choice as to whether to accept assignment, such acceptance is preferred by the Federal government because of concern over the financial liability of beneficiaries, especially for charges for the amount exceeding Medicare's allowed charge. Ambulance providers are encouraged to sign a Medicare participation agreement, under which they agree to accept all Medicare cases on assignment for one year. Those that sign this agreement are known within HCFA as participating providers.

For nonparticipating providers, the difference between submitted and allowed charges reflects a beneficiary liability, although not all providers choose to collect the balance. Variations in participation and assignment rates, along with data on the percent charge reduction, are presented in Table 3-13. These results are summarized below.

Overall, about 28 percent of all ambulance claims were submitted by providers that had signed participation agreements with Medicare in 1987. The percentage was

Table 3.11. Assignment and Charge Reduction Patterns by Region, 1987

Region	Number of Claims 1/	Submitted Charges (Thousands)	Percent of Claims Submitted by Ambulance Providers Accepting Assignment			Allowed Charges (Thousands) for Ambulance Providers			Percent Charge Reduction
						Accepting Assignment		Not Accepting Assignment	
			Participating	Nonparticipating	Total	Participating	Nonparticipating		
I	1,034,740	$115,256	73.9	24.4	98.3	$70,421	$26,599	$ 762	15
II	869,460	75,323	10.0	76.9	94.9	9,500	44,366	3,396	26
III	1,509,840	129,971	54.2	42.6	96.8	53,456	40,041	2,233	26
IV	1,224,440	61,522	24.6	61.5	86.1	9,685	29,705	6,675	25
V	578,120	69,235	33.1	44.8	77.9	21,796	22,625	8,293	24
VI	1,696,140	71,793	41.3	49.5	90.8	10,706	24,614	4,303	34
VII	732,160	26,644	5.0	80.7	85.7	1,431	15,946	4,005	19
VIII	37,620	2,089	6.1	43.2	49.3	74	659	760	28
IX	3,(53,720	268,816	11.6	81.8	93.4	37,006	157,412	13,042	23
X	'11,200	36,109	7.5	72.6	80.1	1,426	22,576	4,775	20
Railroad	08,180	20,338	18.3	17.7	36.1	2,882	2,827	10,297	31
Urban	10,(06,580	755,592	26.2	66.5	92.7	186,074	357,863	36,600	31
Rural	1,'71,040	121,503	38.4	34.5	72.9	42,306	22,019	22,019	31
Total	11,975,620	877,095	28.2	61.2	89.4	226,380	387,429	58,627	23

1/ Number of individual charged items included on submitted bills.

Source: Project HOPE Calculations from the 1987 BMAD Provider file.

Note: Based on a five percent sample of ambulance providers. Aggregate numbers are not strictly comparable to results from other BMAD files.

highest in the Northeast (Region I) with 73.9 percent of all claims submitted by participating providers and lowest in the Midwest and West (Regions VII and VIII--encompassing the states of: Kansas, Missouri, Nebraska, Colorado, Montana, North Dakota, Utah, and Wyoming) where claims submitted by participating provider comprised five and six percent of the total, respectively. Participation in rural areas was somewhat higher than in urban areas (38.4 percent compared to 26.2 percent of all claims were submitted by participating providers).

Despite low participation, in general, ambulance providers accepted assignment for a high percentage of claims (89.4 percent, on average). A notable exception was among providers serving railroad retirees, where 36.1 percent of all claims were accepted on assignment. This was followed by providers serving beneficiaries in Region VIII (including the states of Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming) and Region V (including the states of Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) where assignment rates averaged 49.3 percent and 77.9 percent, respectively. Rural providers were substantially more likely to not accept assignment than urban providers. (Thirty-five percent versus sixty-seven percent of all claims were accepted on assignment.)

Among providers not accepting assignment, submitted charges were reduced, on average, by 21 percent to equal the Medicare allowed charge. Slightly higher than average charge reductions (between 23 and 27 percent) were evident in the Mid-Atlantic (Region III), South (Regions IV and VI), West (Region VIII), and North Pacific (Region X). Charge reductions for nonparticipating providers in rural areas did not differ from those located in urban areas. It is notable that there was no consistent relationship between areas with high charge reductions and areas where a low percentage of all claims were accepted on assignment.

3.5 Conclusion

Total allowed charges for Medicare ambulance services in 1987 amounted to $601.7 million, with 60 percent of this concentrated in the eight states of: California, New York, Pennsylvania, Massachusetts, Ohio, Michigan, Texas, and Florida. An estimated $487 million in allowed charges (81 percent) were for BLS services, and $115 million for ALS services. Only 0.04 percent of Medicare allowed charges for ambulance services in 1987 was for air transport.

Average allowed charge for an ambulance trip varied widely by level of service and across carriers. The average allowed charge for an ALS trip ($202) was nearly twice as much as a BLS trip ($115). Average allowed charge per trip was highest in the Northeast and along the West Coast.

There is a question of whether ambulance services are used at a higher level of life support than is medically warranted. There was a clear regional pattern with respect to service level mix, with providers in the West much more likely to provide ALS services and those in the Northeast more likely to provide BLS services to Medicare beneficiaries. In addition to these regional variations in patterns of use, there was also notable within-carrier variation in allowed charges. These wide ranges in charges levied for similar services are indicative of the need to address the appropriateness of these differences.

One other concern was the impact of unbundling on the total cost of an ambulance trip. Services reimbursed in addition to the base trip rate (add-ons) increased the average allowed charge of a BLS trip by 42 percent, and that of an ALS trip by 74 percent. These differentials varied among carriers. While variation in the differential for BLS services appeared to be mileage-related, with carriers in Wyoming

and Nebraska among the highest, there was no apparent pattern for the variation in ALS differentials.

Previous research showing ESRD patients to be heavy users of ambulance services was supported by this study. Ambulance users with ESRD received, on average, nearly ten times as many ambulance trips in 1987 as non-ESRD ambulance users for Medicare. Most likely, many of these were round trips, presumably transporting patients to renal dialysis facilities and back. Use rates were also higher in the Northeast and lowest in the West. Medicare beneficiaries residing in rural areas were also relatively low users of ambulance services.

There was strong evidence that some carriers are miscoding ambulance services. The carriers in South Carolina, for example, used a code reserved for the Medicaid program (nonemergency taxi transport). Nationwide of Ohio also used a high percentage of the undefined local codes as well as a nonspecific code for miscellaneous ambulance services. Modifiers to indicate the origin and destination of ambulance runs are not consistently used. Billings for ambulance services attributed to nonambulance specialties (those other than Specialty 59) were highest in the States of Washington and Oregon, where ambulance claims had been paid to Specialty 99 (Unknown Specialty), Specialty 87 (All others) and Specialty 88 (Unknown Suppliers).

Despite these apparent problems, the overall quality of Medicare data on ambulance spending was sufficient to permit cross-carrier comparisons in the aggregate and at the procedure code and trip level, and to provide insights into the patterns of use and charges. The notable within-carrier variation in allowed charges is indicative of the wide ranges in fees billed by ambulance providers for the same service. This

feature of the ambulance industry has an important bearing on the greater problem of determining the level of allowed charges appropriate for the range of Medicare ambulance services and is discussed in more detail in the concluding section on policy implications.

Section 4: Survey of Ambulance Providers

As previously mentioned, concerns about the appropriateness of Medicare payment policy led to legislation mandating a study of reimbursement for ambulance services. As a result, a comparison of Medicare allowed charges to provider costs by type of ownership, urban/rural location, and level of service was incorporated into this study. Since no definitive studies have been done on ambulance service costs, and no comprehensive secondary data sources exist on service costs, primary data collection was necessary.

This section of the report describes the Survey of Ambulance Providers conducted by Project HOPE's Center for Health Affairs (CHA) and Social and Scientific Systems (SSS). This section discusses: 1) the survey design and methodology; 2) general descriptive findings; and 3) results of the economic cost function analysis. Comparisons of provider costs to the charges allowed by Medicare are addressed separately in Section 5. A copy of the final survey instrument is attached in Appendix E. More detailed discussions of sample selection, sample weighting, and the estimation of an economic cost equation are found in Appendix F.

4.1 Methodology

The overall objective of the Survey of Ambulance Providers was to collect information to estimate an economic cost function for the ambulance industry. Average and marginal costs of an ambulance run by type of provider, urban/rural location, and level of service could be derived on this basis. Choosing this approach necessarily dictated the survey methods used. The following text explains how the sample was developed and selected as well as how the survey instrument was designed for this

analysis of ambulance provider costs. In addition, the data collection procedures, response rates, and properties of the Provider Survey sample are discussed in this description of methodology.

4.1.1 Sample Selection

No national listing of public and private ambulance providers currently exists. Ambulance providers are not classified by Standard Industrial Code (SIC) and the industry is ill-defined. Consequently, selecting a nationally representative sample would be very cumbersome and expensive involving data collection on ambulance providers in all 50 states. In light of time and budget constraints, a sample of providers in four states was determined to be an appropriate, if limited, method for investigating provider cost differences.

The four States selected for the Survey of Ambulance Providers were California, Massachusetts, Michigan, and Texas. These States were chosen for a variety of reasons. First, each of these States is located in a different major geographical regions of the United States. Second, the four States include a variety of distinct urban and rural settings from the Berkshires in Massachusetts to the suburbs of Los Angeles and from Michigan's Upper Peninsula to the large Texas metropolis of Dallas. In addition, in 1987, California, Michigan, Massachusetts, and Texas accounted for 21 percent of Medicare beneficiaries and 23 percent of all allowed charges for ambulance services. According to conversations with the American Ambulance Association, these four States represented a diverse sample in terms of the ambulance industry.

With the help of industry and state and local government personnel, Project HOPE and Social and Scientific Systems (SSS) developed a list of the universe of providers in these four states. Providers that served a select population, e.g., those serving correctional facilities, military bases or industrial sites were excluded based on

the assumption that they would be unlikely to provide services to Medicare beneficiaries. Similarly, providers that do not transport patients but offer "first-response" medical treatment in emergencies, e.g. EMS units of police departments, were dropped from the sampling frame. Since the primary focus of this analysis was ground transport ambulance service, providers offering only air ambulance services were also eliminated from the list. After these exclusions, the total universe was 1,870 ambulance providers. The total number of providers eligible for inclusion in the sample in California, Massachusetts, Michigan, and Texas was 365, 300, 369 and 836, respectively.

The next step in developing the sampling frame was to identify the proportion of urban and rural providers in each state. State ambulance provider lists were used to create a single file with unique provider ID numbers and their corresponding ZIP codes. This file was matched against a ZIP code file to determine if an ambulance provider was within an MSA. Those providers with an MSA code were designated as urban providers, those without as rural providers.

In order to ensure that there would be enough power to detect significant cost differences across the strata (urban/rural location and provider type), the sampling plan called for a sample of 470 ambulance providers, assuming this would result in 280 completed cases. An equal sample size was selected from each State in order to focus on the diversity of the industry in these States. Responses were later weighted to produce representative cost estimates for the four States.

Originally, the selection of the sample was to be stratified by urban versus rural providers. To secure adequate representation from rural providers, these providers were to be oversampled. It was anticipated that the sample would be randomly selected from within the two strata. After an analysis of the urban/rural distribution of the universe, it was determined that there was a sufficient number of rural providers in

the sample. Therefore, rural providers were not oversampled. Instead, a simple random selection was used by taking every other provider on a State list to reach the desired counts of 117 or 118. Table 4.1 below shows the distribution of urban and rural providers for the universe and the sample.

Table 4-1

DISTRIBUTION OF URBAN AND RURAL PROVIDERS

	Universe			Sample		
State	**Urban**	**Rural**	**Total**	**Urban**	**Rural**	**Total**
California	285	80	365	87	30	117
Massachusetts	235	65	300	96	21	117
Michigan	179	190	369	51	67	118
Texas	398	438	836	57	61	118
Total	**1097**	**773**	**1870**	**291**	**179**	**470**

As indicated in the table, a total sample of 470 providers was drawn. These providers were mailed the questionnaires along with an endorsement letter from their state EMS agency or ambulance association. The potential sample size was reduced to 434 since 36 providers were later designated as out of scope (the firms were duplicates, did not provide ground ambulance services, etc.). More information on data collection procedures is presented in Section 4.1.3.

4.1.2 Survey Design

While the sampling frame was being developed, the survey questionnaire was designed, pre-tested, and revised. As a first step in designing a questionnaire, literature

on estimating the costs of providing ambulance services was reviewed. The literature review (and field discussion with experts) was useful in determining what information could be obtained from providers. A second important step in designing the survey instrument was consideration of the minimum data necessary to estimate a cost function. The necessary data dictated the content of the Survey of Ambulance Providers and included: the types and amounts of service levels, the prices of inputs (labor and capital), and firm characteristics (location, ownership status, average distance per call, average response time, etc.).

No published literature on the costs of producing ambulance services over the past decade could be found. However, two unpublished studies were discovered. One was a report written by the Rate Development Branch of the Health Care Policy and Standards Divisions, California Department of Health Services (DHS, 1982). In 1986 the Emergency Health Section of the Georgia Department of Human Resources also conducted a survey of licensed ambulance providers (Sweitzer, 1986). The California and Georgia studies were useful in designing the questionnaire for the Survey of Ambulance Providers since both supplied their survey instruments.

The draft survey instrument was developed by Project HOPE and SSS staff with input from HCFA officials, the American Ambulance Association, and EMS authorities and/or associations from the States involved in the Survey of Ambulance Providers. When the draft questionnaire was completed, a field test with ten ambulance providers in the local area was conducted. First, several potential respondents were called to see if they would be willing to review the survey instrument and give their reaction to their ability to complete the questionnaire. Those providers who agreed were mailed the draft questionnaire and then interviewed over the telephone. The final survey instrument was developed based on both the results of the pre-test and a review of the objectives of the project. A copy of the final questionnaire is attached in Appendix F.

4.1.3 Data Collection Procedures

Data collection for the Provider Survey was conducted by mail with a telephone follow-up. The survey instrument and an endorsement letter from each State EMS or ambulance association was mailed to the selected ambulance providers in May 1990. Data were requested for the provider's 1989 fiscal year. Each of the returned questionnaires was manually edited, and the data were both entered into a computerized database and verified for internal consistency. After the initial mailing, almost one third of the providers had responded. California had the lowest initial response rate of 19 percent while Massachusetts and Michigan had the highest rates at 37 percent.

Next, the telephone follow-up portion of the data collection began. After the survey had been mailed, two additional questions were determined to be necessary: 1) the length of time providers had been in business, and 2) the method used by the respondent to collect the financial data. Therefore, all mail return respondents were called back to collect this information. This opportunity was also used to query respondents about data inconsistencies or omissions that were noticed during the internal reliability checks. As a result of this extra step, the quality of the data collected was greatly improved.

Nonrespondents were also called and asked to respond to at least the "core data questions, consisting of fundamental data required for cost analysis, plus data elements that allowed for imputation of missing data. Nonrespondents were called until at least a 60 percent response rate was obtained. Nonrespondents were not called randomly. Specific provider types (e.g., fire departments) and providers in certain locations (e.g., California) were targeted for the telephone follow-up since they were underrepresented

in respondents compared to the universe of providers in these States. At the end of the telephone core data collection, the overall response rate had reached a total of 65 percent.

After a re-examination of response rate patterns, it was determined that some fire departments and providers in major urban areas were still not adequately represented in the respondent database. As a result, core data were collected from previous nonrespondents through telephone interviews with an additional 14 ambulance providers. Similarly, 36 respondents were called back in an effort to obtain better financial data.

A different line of questioning was used for fire departments given their difficulty in providing financial data. If financial data for the ambulance portion could not be separated, the respondent was asked to give financial data for the entire fire department along with the total number of fire vehicles. This information was to be used to impute financial data for the ambulance portion of fire department emergency services.

4.1.4 Survey Responses and Properties of the Sample

As indicated in the Table 4-2, a total of 296 providers responded to the Survey of Ambulance Providers, resulting in an overall response rate of 68 percent. California had the lowest response rate (54%), while Michigan had the highest (75%). The number of responding providers ranged from 56 in California to 82 in Michigan. A total of 36 providers were deleted from the sampling frame, either because they were found to be duplicates of firms already listed in the sample, or because they did not provide ambulance services to the general public.

Table 4-2
FINAL RESPONSE RATE

States	Original Sample	Mail Response	Phone Core Data	Deleted Providers	Response Rate
California	117	22	34	13	54%
Massachusetts	117	43	38	2	70%
Michigan	118	47	35	8	75%
Texas	118	36	41	13	73%
TOTAL	**470**	**148**	**148**	**36**	**68%**

Note: Deletions were due to duplicate providers sampled, or provider was out of the scope of this study.

The response status of urban and rural providers is displayed in Table 4-3. A total of 178 urban providers responded to the Survey of Ambulance Providers compared to 118 rural providers. This resulted in a slightly higher response rate among rural than urban providers at 71 percent and 66 percent, respectively. The number of urban and rural ambulance providers deleted because they were duplicates or out-of-scope was also proportionally similar at approximately 7 to 8 percent of the original sample.

Table 4-4 Distribution of Sampled Ambulance Providers by Type and Location in Four States, 1989

	California		Texas		Michigan		Massachusetts		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Provider Type										
Private	30	53.6	19	24.7	14	17.1	10	12.3	73	24.7
Government Owned and Operated	16	28.6	31	40.3	37	45.1	61	75.3	145	49.0
Volunteer	4	7.1	25	32.5	28	34.1	7	8.6	64	21.6
Hospital Owned and Based	3	5.35	2	2.5	3	3.7	2	2.5	10	3.4
Other	3	5.35	0	0	0	0	1	1.3	4	1.3
Location 1/										
Urban	34	60.7	27	35.1	14	17.1	32	39.5	107	36.1
Rural	22	39.3	50	64.9	68	82.9	49	60.5	189	63.9
Total	56	100.0	77	100.0	82	100.0	81	100.0	296	100.0

1/ Urban and rural locations are differentiated by whether the community in which the ambulance provider is located has a population of more or less than 25,000, respectively. This differs from Table 4-3 where urban designation is based on location in a Metropolitan Statistical Area (MSA).

Source: Project HOPE Survey of Ambulance Providers, 1989

If rural is defined as communities of fewer than 25,000 persons, this Provider Survey sample is 64 percent rural (and thus 36 percent urban), as shown in Table 4-4. When urban is defined as being in an MSA, this provider sample was 60 percent urban. The MSA concept includes as urban many small communities (of 3,000 to 5,000 people) on the fringes of counties that are contiguous to (but 25 or more miles away from) counties with densely populated cities. When examining differences in the characteristics of urban and rural firms, the 25,000 or more definition of urban is more accurate. This definition has been used for the remaining descriptive presentations and the analysis of costs.

4.1.5 Item Nonresponse and Imputation

The validity of a cost function approach is highly dependent on the soundness of the underlying data. Two factors affecting data quality include item nonresponse and imputation methods. Since the objective of the Survey of Ambulance Providers was to generate cost estimates for the industry, a subset of responders was separated into an analytic sample. The determining factor for inclusion in the analytic sample was whether the firm provided information on total costs (i.e., Total Expenditures under section D.1 of the survey questionaire). Seventy-two percent of all respondents, or 212 providers, were able to provide this information. The distribution of providers in this sample, by provider type, was roughly similar to that of all survey respondents, with slightly more government providers unable to provide information on costs. This distribution was: 25 percent private, 46 percent government, and 24 percent volunteer. On the urban-rural dimension, the response rate was 39 percent urban and 61 percent rural when using the 25,000 persons criterion. Item nonresponse was assessed and data imputations were performed for this analytic sample only.

Item response by question is presented in Appendix E. All respondents in this analytic sample provided data on total costs, and the majority answered questions regarding every independent variable in the cost function. Item nonresponse was five percent or lower for these cost function variables with three exceptions. Item nonresponse for detailed expenditures on vehicles and depreciation (used to estimate the price of capital) were 11 and 51 percent, respectively. The average distance per call was calculated from responses on the number of vehicle miles traveled, which obtained an item nonresponse rate of 12 percent.

In anticipation of item nonresponse, data had been collected to impute missing values. For example, in order to impute data for the price of capital (vehicles and depreciation), information on the number and type of vehicles, average vehicle age, and number of chassis miles was collected.

Item nonresponse was generally less than five percent on the information used to impute the missing values for the independent variables. Missing values for these items were imputed based on the observations with valid responses, controlling for differences between organizations that answered the relevant item and those that did not. Missing values were derived from a predicting equation using the valid observations where the variable of interest was regressed on truly exogenous variables (urban/rural dummy, ownership dummies, and State dummies). The average coefficient of determination for these imputation models was .60. The imputations appeared reasonable and should not bias the cost function estimates in any systematic way.

In addition to these imputations, approximately 3 percent of respondents in the analytic sample were unable to separate out the cost of the ambulance operation from fire operations. Ambulance-specific costs were calculated using the proportion of predicted expenditures on ambulance personnel to total personnel costs and applying this ratio to total costs. Personnel expenditures for ambulance operations were

predicted using information on the numbers and types of personnel deployed on an ambulance run, hourly wages, and the number of ambulances maintained.

4.2 Description of Survey Results

Although the main objective of the survey was to gather the data essential to estimate a cost function, descriptive statistics provided additional insight into the functioning of the ambulance industry. In what follows, various characteristics of firms in the sample are presented. While these insights may not be generalizable to all ambulance firms in the United States, many of the findings have been validated by other studies and are consistent with anecdotal evidence. The focus of the Survey of Ambulance Providers was on ground operations. Although six percent of respondents also provided air ambulance services, data on services provided, resources, and costs were collected only for ground operations.

4.2.1 Characteristics of the Service

As discussed in Section 4.1.4, nearly half of all respondents to the survey were government owned and operated. Roughly one quarter were private and slightly fewer were volunteer operations (Table 4-4). This distribution, while similar to that of the nation, varies by State. For example, in California, nearly 54 percent of all respondents were private firms. By contrast, in Massachusetts, the large majority (75 percent) were government owned and operated. Most of these were municipally-owned fire and rescue operations.

The distribution of respondents by urban/rural location also varied among the States. In Michigan, rural providers were predominant (83 percent of the total), while in California, urban providers comprised the majority of respondents (61 percent).

There was a broad representation by size of operation. The largest provider in the survey was government owned and operated and provided exclusive service to a large metropolitan area. This provider operated 53 separate garages and responded to more than 220,000 calls in 1989. By contrast, the smallest ambulance service provider served a sparsely populated rural area. Despite a catchment area of a 30-mile radius, this county-operated service responded to only 20 calls in that same year.

4.2.2 Services Provided

The data in Table 4-5 show the distribution of calls responded to by the providers in the four-State sample and those that resulted in patient transport. The sample providers responded to almost 1.5 million ambulance calls. Privates firms responded to slightly less than half of all calls although they account for less than one-fourth of the firms included in the sample. Government owned and operated firms responded to another 47 percent of all calls and volunteer operations accounted for less than two percent. Providers located in urban areas accounted for the vast majority of the calls (90 percent)

On an individual call basis, about 60 percent resulted in a patient transport. Of the calls answered by private and volunteer companies, about three-fourths resulted in a patient transport. Government owned and operated firms transported patients in less than half (46 percent) of the calls to which they responded. Of calls resulting in patient transport, 64 percent were provided on an emergency basis with the remainder being scheduled in advance. About 92 percent of all scheduled runs were provided by private firms. Scheduled calls represent 55 percent of patient transports by private firms.

Table 4.5 Number and Percent of Ambulance Calls Responded to and Distribution of Calls Resulting in Patient Transport by Type of Call, Type of Provider, and Location 1969

Provider Type and Location		All Ambulance Calls 1/		Calls Resulting in Patient Transport 2/							
				All Transported Cases			Emergency ALS		Emergency BLS		Nonemergency	
	Number	Number	Percent	Number	Percent Distribution	Percent of Calls	Number	Percent Distribution	Number	Percent Distribution	Number	Percent Distribution
Type												
Private	73	717,687	49.5	520,103	59.7	72.5	105,298	54.1	129,420	35.3	285,457	92.1
Government Owned/Operated	145	684,009	47.2	316,251	36.3	46.2	60,233	41.2	224,411	61.2	11,607	3.6
Volunteer	64	24,671	1.7	19,164	2.2	77.1	2,245	1.2	6,969	2.5	7,970	2.6
Other	14	23,927	1.6	15,491	1.6	64.7	6,006	3.5	3,779	1.0	4,026	1.6
Location												
Urban	107	1,306,195	90.2	782,274	67.5	56.3	172,302	66.5	311,021	85.1	270,151	89.6
Rural	169	142,299	9.8	106,635	12.5	76.5	22,360	11.5	54,766	14.9	31,709	10.2
Total	296	1,450,494	100.0	671,109	100.0	60.1	194,662	100.0	366,587	100.0	309,860	100.0

Notes: 1/ Includes calls that did not result in Patient Transport.
2/ Percent Distributions may not sum to 100.0 percent because of rounding.

Source: Project HOPE Survey of Ambulance Providers, 1969.

Table 4-6 Percent Distribution of Ambulance Calls by Level of Service, Provider Type and Location in Four States, 1989

	Percent of Total Calls																			
	California				Texas				Michigan				Massachusetts				Total			
	N	ALS	BLS	%* Trans.	N	ALS	BLS	%* Trans.	N	ALS	BLS	%* Trans.	N	ALS	BLS	%* Trans.	N	ALS	BLS	%* Trans.
Provider Type																				
Private	29	28.2	50.5	78.7	18	25.6	62.7	88.3	14	18.7	61.8	80.5	9	3.0	76.7	79.7	70	22.4	59.3	81.7
Government Owned and Operated	16	37.2	32.0	69.2	30	17.1	54.5	71.6	37	19.7	67.1	86.8	60	4.5	74.7	79.2	143	14.8	63.7	78.5
Volunteer	4	23.1	65.1	88.2	25	5.9	71.5	77.4	28	6.1	68.6	74.7	7	11.2	47.9	59.1	64	7.6	67.2	74.8
Other	6	39.6	34.8	74.4	2	0.0	100.0	100.0	3	22.0	39.7	61.7	2	18.0	29.7	47.7	14	25.6	44.0	69.6
Location																				
Urban	33	30.8	43.8	74.6	26	24.3	52.7	77.0	14	20.9	42.8	63.7	32	6.3	72.1	78.4	105	20.4	54.5	74.9
Rural	22	33.0	45.5	78.5	49	9.9	69.0	78.9	68	13.8	70.4	84.2	47	4.9	70.0	74.9	186	12.8	67.0	79.8
Total	55	31.7	44.5	76.2	75	14.9	63.3	78.2	82	15.0	65.7	80.7	79	5.5	70.8	76.3	291	15.6	62.5	78.1

Source: Project HOPE Survey of Ambulance Providers, 1989
* Percent of all calls that resulted in patient transport.

The data in Table 4-6 show the pattern of patient transport with the ambulance firm being the unit of analysis rather than the individual call. This reduces the effect of the few larger companies that transport a low percentage of the patients for whom they make call; these are most notably government owned and operated companies. This approach treats all companies of a given type equally without regard to size. The most notable change from this alternative method of presenting the data is seen among government owned and operated companies. While Table 4-5 show that these firms transport a patient in only 46 percent of their calls, Table 4-6 shows that the average government owned and operated company transports a patient almost 79 percent of the time.

The average private ambulance firm converts 22 percent its calls into an ALS run. This is triple the rate of volunteer companies and 50 percent greater than government owned and operated companies. In contrast, volunteer companies were more likely to respond with a BLS run than other provider types (the average volunteer company had 67 percent of it calls resulting in a BLS run compared to 59 percent for private firms and 64 percent for government firms). The mix of service levels provided varied by State. Firms of each type in California were more likely to provide an ALS service than corresponding provider types in other States. In Massachusetts, ambulance companies were more likely to provide a BLS service than those in other sampled States although this was not consistent across provider types. Similarly, ambulance providers in rural areas were more likely to provide a BLS service on ambulance calls. On average across all firms, 21.9 percent of the calls did not result in patient transport. This percentage was higher for volunteer firms than for privately-owned firms.

4.2.3 Resources

The tendency of volunteer firms to provide BLS as opposed to ALS services was also supported by data on capabilities, staff mix, and type of vehicles used. These data are presented in Tables 4-7 through 4-9.

Volunteer firms in the sample were much less likely to provide ALS capabilities, such as intravenous (IV) therapy, endotracheal intubation, and electrocardiogram (EKG) monitoring on a given ambulance call than other provider types (Table 4-7). Private firms, by contrast, were much more likely to provide EKG monitoring on a given call relative to other provider types, although their likelihood to supply either IV therapy or endotracheal intubation on a call was not statistically different from that of government owned and operated firms. Differences in capabilities were not statistically significant for urban and rural providers.

Table 4-8 presents the mean number of full-time equivalent staff per call by level of training. On average, more than one paramedic and more than one emergency medical technician (EMT) were sent on an ALS call. BLS calls were generally staffed by two EMTs, although some providers also sent a paramedic. On ALS calls, paramedics were slightly more likely to be used by private and government providers than by volunteer firms, and were more likely to be used on urban as opposed to rural calls. Private providers and those located in urban areas, were much more likely to have at least one registered ALS vehicle (Table 4-9). Volunteer firms were least likely to have an ALS registered vehicle.

Table 4-7 Indicators of Quality of Service by Provider Type and Location, 1989

	Response Time (Minutes)			Percent of Calls on Which the Following Capabilities Were Available:					
				Intravenous Therapy		Endotracheal Intubation		EKG Monitoring	
	N	Average	SE	N	Percent	N	Percent	N	Percent
Provider Type									
Private	65	7.02	.34	36	41.6	35	37.0	38	52.2
Government Owned/Operated	136	6.06	.33	55	35.1	56	28.9	56	36.5
Volunteer	60	8.84	.47	37	17.7	36	11.5	33	23.1
Other	13	8.68	1.33	5	46.4	5	32.6	5	47.5
Location									
Urban	96	6.15	.33	52	37.4	52	31.0	53	38.9
Rural	178	7.52	.30	81	31.2	80	25.2	79	37.5
Total	274	7.02	.23	133	33.5	132	27.3	132	38.0

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-8 Mean Number of Staff Per Call By Level of Training, 1989

	ALS Paramedics/Call			ALS EMTs/Call			BLS Paramedics/Call			BLS EMTs/Call		
	N	Mean	SE	N	Mean	SE	N	Mean	SE	N	Mean	SE
Provider Type												
Private	43	1.2	.09	38	1.2	.11	43	.7	.12	66	1.0	.08
Government Owned/Operated	55	1.5	.08	59	1.4	.12	71	.6	.10	126	2.1	.13
Volunteer	15	1.0	.10	9	1.7	.04	18	.6	.17	56	2.1	.12
Other	11	1.0	.23	10	1.0	.30	8	.5	.33	10	1.9	.64
Location												
Urban	65	1.5	.08	57	1.2	.12	90	.7	.11	91	1.9	.17
Rural	59	1.2	.07	69	1.5	.09	50	.5	.09	167	2.0	.07
Total	124	1.4	.08	126	1.4	.10	140	.6	.10	258	2.0	.11

Source: Project HOPE Survey of Ambulance Providers, 1989

4.2.4 Expenditures

As the size of firm in the sample varied, so did total expenditures. Annual expenditures for the sampled firms ranged from $1,600 to $35.5 million in 1989. Overall, expenditures on personnel accounted for nearly 50 percent of the total (Table 4-10). Expenditures on vehicles and depreciation accounted for another 18 percent. This distribution varied by type of provider and by urban/rural location. Two features are worthy of note. First, government owned and operated firms expended less than two percent of total costs on office and garage space, a substantially lower percent than either private or volunteer providers. This indicates that the costs of office and garage space may not be fully expensed to the government ambulance operation and may instead be costed to another government department. Second, as expected, volunteer firms spend a substantially smaller portion of total costs on personnel (about 22 percent compared to 63 percent for government operations and 51 percent for private firms). More than three-fourths of all volunteer firms operated with a predominantly volunteer (80 percent or more) staff (Table 4-11). By contrast, nearly 90 percent of private firms operated with a predominantly paid staff.

4.2.5 Fee Structure and Sources of Funds

Almost all of the firms in the sample (89 percent) levied some charge for ambulance services. These charges ranged widely according to State, type of provider, and urban/rural location. Within these categories, there was also substantial variation with standard deviations often more than forty percent of the mean. Providers in California had the highest charges (Table 4-12). In that State the average ALS charge per call was $450, and the charge for an average BLS call was $295. These charges included base rate charges as well as any add-on fees for items such as mileage or oxygen. Texas had the lowest charges at $196 and $118 for average ALS and BLS calls, respectively. As shown in Table 4-13, charges levied by private providers were

Table 4-9 Percent of Providers With ALS Vehicles By Provider Type and Location, 1989

	N	Percent of Providers With at Least One ALS Registered Vehicle
Provider Type		
Private	73	54.8
Government Owned/Operated	145	35.9
Volunteer	64	21.9
Other	14	64.3
Location		
Urban	107	72.3
Rural	189	42.6
Total	296	54.2

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-10 Percent Distribution of Total Costs by Provider Type and Location, 1989

	N	Vehicles	Supplies	Office/ Garage	Insurance	Personnel	Depreciation	Bad Debt	Other	Total
Provider Type										
Private	39	10.8	3.4	4.0	5.3	51.4	5.3	9.7	9.7	100.0
Government Owned/Operated	52	8.4	4.7	1.8	2.7	63.0	5.0	7.9	3.6	100.0
Volunteer	27	18.7	12.2	6.1	11.9	21.7	10.8	9.7	13.1	100.0
Other	6	8.8	2.4	1.4	3.5	46.2	7.2	11.9	8.4	100.0
Location										
Urban	54	8.4	3.7	2.8	3.9	56.1	5.5	9.3	6.6	100.0
Rural	70	13.8	7.4	3.9	6.9	44.5	7.2	8.8	8.9	100.0
Total	124	11.4	5.8	3.4	5.6	49.6	6.5	9.0	7.8	100.0

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-11 Percent of Providers With Predominantly* Paid or Volunteer Staff By Provider Type and Location, 1989

	Paid		Volunteer	
	N	Percent	N	Percent
Provider Type				
Private	71	89.9	72	1.4
Government Owned/Operated	142	77.4	143	13.3
Volunteer	58	12.0	64	76.6
Other	14	77.4	14	7.1
Location				
Urban	105	94.4	105	3.8
Rural	180	51.3	188	35.1
Total	285	67.2	293	23.9

Source: Project HOPE Survey of Ambulance Providers, 1989
* Defined as 80 percent or more of total FTE staff

also higher ($413 for an average ALS call, $229 for a average BLS call) than those levied by other ownership groups. There was no statistically significant difference between most charges levied by volunteer and government owned firms. Mean charges by urban/rural location are presented in Table 4-14. Because of the wide variation in fees by urban/rural location, statistically significant differences in charges could not be detected. In general, fees ranged most widely for rural providers.

Data on sources of funds were collected in order to evaluate differences in the level of subsidies among firms (Table 4-15). Subsidies were defined as any government revenue that was not derived from Medicare or Medicaid payments. Government subsidies accounted for an average of 31 percent of all ambulance provider revenue. Government providers received a substantially larger share of their revenue from this source (41.1 percent) than private providers (17.3 percent). Rural providers were more dependent upon government subsidies than urban providers (38.4 percent compared to 17.7 percent). It is notable that private providers derived a significantly larger proportion of their total income from Medicare than other provider types (30.8 percent compared to 18.9 percent for government owned and operated providers and 12.8 percent for volunteer providers). Medicare was also a more important revenue source for urban providers (30.8 percent) than for rural providers (15.3 percent). Rural providers relied more heavily upon fundraising or gifts than their urban counterparts (18.9 percent of total revenue compared to 4.7 percent).

4.3 Cost Function Estimation

Cost functions relate total costs of a firm to the firm's output level, input prices, and other relevant firm characteristics. This functional relationship assumes that for any given level of output, a firm will try to produce at the minimum possible cost given input prices (e.g., paramedic wages, the price of vehicles, etc.). Based on this cost-

Table 4-12 Mean Charge by State and Type of Service, 1989

Charge Structure	California			Texas			Michigan			Massachusetts		
	N	Mean Charge	SE	N	Mean Charge	SE	N	Mean Charge	SE	N	Mean Charge	SE
Base ALS Charge per Call	27	$329.59	22.43	24	$135.50	13.71	14	$224.86	20.86	11	$180.00	43.40
Base BLS Charge per Call	30	162.72	17.25	42	97.50	6.93	48	133.35	8.44	49	112.69	4.49
Add-On-Fee for ALS Mileage (dollars per mile)	30	8.44	.46	19	6.16	3.81	11	16.72	13.33	6	22.67	17.51
Add-On-Fee for BLS Mileage (dollars per mile)	31	8.39	.37	35	2.63	.17	42	2.79	.15	26	9.08	4.08
Add-On-Fee for Oxygen (dollars per claim)	33	32.33	2.13	32	16.72	1.60	29	14.97	2.05	23	19.56	2.00
Average ALS Charge per Call	40	449.65	32.94	33	195.58	17.23	19	262.68	.25	12	262.00	38.48
Average BLS Charge per Call	44	294.57	.23	59	118.24	7.86	63	175.86	10.56	61	142.84	7.47

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-13 Mean Charge by Provider Type and Type of Service, 1989

Charge Structure	Private N	Private Mean Charge	Private SE	Government Owned/Operated N	Government Owned/Operated Mean Charge	Government Owned/Operated SE	Volunteer N	Volunteer Mean Charge	Volunteer SE	Other N	Other Mean Charge	Other SE
Base ALS Charge per Call	33	$297.18	18.57	31	$154.84	19.65	7	$154.29	30.81	5	$318.40	64.99
Base BLS Charge per Call	55	195.98	10.72	84	112.38	6.84	30	108.67	12.00	9	120.56	21.40
Add-On-Fee for ALS Mileage (dollars per mile)	[redacted]	8.84	1.73	20	9.30	5.33	6	28.00	24.42	3	3.67	1.20
Add-On-Fee for BLS Mileage (dollars per mile)	48	5.96	.43	53	5.77	2.03	25	3.36	.54	8	3.63	.68
Add-On-Fee for Oxygen (dollars per claim)	46	27.89	2.05	48	17.56	1.48	18	16.00	2.64	5	22.20	6.23
Average ALS Charge per Call	48	412.70	26.69	44	215.84	25.18	11	280.55	66.65	9	360.44	33.79
Average BLS Charge per Call	63	229.00	15.00	100	145.48	7.22	45	166.07	20.01	11	192.45	22.50

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-14 Mean Charge by Urban/Rural Location and Type of Service, 1989

Charge Structure	Urban N	Urban Mean Charge	Urban SE	Rural N	Rural Mean Charge	Rural SE
Base ALS Charge per Call	39	$231.87	20.99	37	$222.59	21.15
Base BLS Charge per Call	75	115.95	7.31	103	132.70	7.04
Add-On-Fee for ALS Mileage (dollars per mile)	38	9.57	3.50	31	11.78	4.97
Add-On-Fee for BLS Mileage (dollars per mile)	58	7.64	2.13	84	3.85	.279
Add-On-Fee for Oxygen (dollars per claim)	46	25.63	1.68	71	18.44	1.52
Average ALS Charge per Call	56	293.45	19.81	48	331.29	33.15
Average BLS Charge per Call	83	171.13	8.61	144	176.18	10.41

Source: Project HOPE Survey of Ambulance Providers, 1989

Table 4-15 Revenue Source as a Percent of Total Revenue By Provider Type and Location, 1989

		Medicare		Medicaid		Other Government		Fundraising/Gifts		Contractual Arrangements/ Subscription Services		Patient out of pocket/ pvt. insurance	
	N	Percent	SE	Percent	SE	Percent	SE	Percent	SE	Percent	SE	Percent	SE
Provider Type													
Private	52	30.8	.03	6.9	.01	17.3	.04	3.9	.02	6.3	.02	34.9	.02
Government Owned/Operated	98	10.0	.02	4.4	.01	41.1	.05	10.0	.03	2.3	.01	23.3	.02
Volunteer	51	12.8	.03	4.8	.02	32.2	.05	30.0	.05	6.5	.03	13.7	.02
Other	8	22.9	.08	10.3	.06	3.1	.03	25.9	.16	19.0	.10	18.8	.10
Location													
Urban	70	30.8	.03	6.2	.01	17.7	.04	4.7	.02	7.4	.02	33.3	.02
Rural	136	15.3	.02	4.9	.01	38.4	.04	18.9	.03	3.8	.01	18.8	.01
Total	206	20.6	.017	5.3	.008	31.6	.028	14.1	.021	5.0	.104	23.7	.023

Source: Project HOPE Survey of Ambulance Providers, 1989
Note: Data are presented only for those respondents that provided information on every revenue category.

minimizing behavior and given relative input prices, estimates of total, average and marginal costs can be traced out for each level of output. (For a more in-depth discussion see Appendix F).

In this analysis, provider costs are defined as actual expenditures (for staff, equipment, supplies, etc.) plus depreciation. In particular, it is important to note that costs were not imputed for volunteer labor or subsidized garage space. Given the different relative factor prices faced by volunteer, private and government firms (e.g., although volunteer firms may have to pay the same wages for paramedics as private firms, they are likely to pay a much smaller portion of their total staff), and the substantial differences in the mix of these provider types in rural and urban areas, separate cost functions have been estimated by provider type and urban/rural location.

As explained in further detail in Appendix F, the estimated cost functions achieved a high degree of explanatory power with independent variables explaining more than 70 percent of the variations in total costs. Signs and sizes of the estimated parameters accorded, for the most part, with expectations. Output (e.g., total number of calls) was by far the more important predictor of total costs although other significant variables included input prices, and for some provider types and locations, whether or not response times were mandated by a local authority and the average distance of a call.

The marginal cost (MC) and average incremental cost (AIC) estimates by provider type and location are given in Table 4-16. MC is defined as the change in total cost brought about by changing output by one unit. MC is how much more (or less) it costs to make one more (or less) call. AIC are the multiproduct analogue to

average cost for the single product firm. To derive these estimates, cost shares by level of service have been calculated from the cost function and divided by the respective number of calls (e.g., ALS, BLS, etc.).

Table 4-16

MARGINAL AND AVERAGE INCREMENTAL COSTS PER CALL BY PROVIDER TYPE AND LOCATION

Provider Type/Location	Service	MC	AIC
Private	Emer. ALS	$154	$250
Private	Emer. BLS	105	171
Private	NonEmerg.	89	132
Government	Emer. ALS	$141	$127
Government	Emer. BLS	61	53
Government	NonEmerg.	47	50
Volunteer	All	$ 49	$ 67
Urban	ALS	$123	$240
Urban	BLS	66	123
Rural	Emer. ALS	$ 78	$103
Rural	Emer. BLS	82	97
Rural	NonEmerg.	23	35

There are a number of important findings presented in Table 4-16. Focusing on AIC first, ALS services cost more than BLS in all cases. This is expected. Similarly, urban ALS and BLS services, respectively, cost more on average than their rural counterparts. Another result that conforms with expectations is that volunteer services

are cheaper than private or government-based emergency services. Not surprisingly, private providers face the highest costs in this sample, other things constant. The AIC for private providers of emergency ALS services is $250, while emergency BLS services are $171. The descending order of AIC estimates are private, urban, government, rural, and volunteer. The same general results hold for MC as for AIC.

In most cases shown in Table 4-16 AIC is greater than MC. This means that both MC and AIC are decreasing as the number of calls increases. Economists refer to this situation as positive economies of scale: i.e., as the scale (level of output) increases, MC and AIC decline because the marginal product of the resources is greater than the average product. This situation is expected in the ambulance sector because providers very seldom operate at full capacity throughout the day. In order to stay in business, it is clear that ambulance firms must be paid an amount that covers their AIC to produce each product. If they were paid their MC for producing each product, they would take a loss on each product.

For government providers, the above does not hold true; marginal costs are higher than average costs. This apparent anomaly may have arisen because government providers often receive an indirect subsidy to their overhead costs, with garage space, or even equipment, costed to some other government department. Had government costs been more accurately expensed, our results most likely would have shown that the provision of ambulance services is a decreasing cost industry, regardless of provider type. Intuitively, maintaining a capacity to respond to emergencies in a timely fashion leads to the situation where average costs are above marginal costs.

4.4 Conclusion

The Survey of Ambulance providers achieved a 68 percent response rate. Respondents were proportionally similar to the universe of ambulance providers in the four States with respect to urban/rural location and roughly similar to the national distribution by provider type. There was a slightly higher representation of rural and private firms than anticipated, based on those distributions.

Respondents illustrated the diversity in the ambulance industry with large variations in size of firms, response capabilities, mix of resources, and charges levied for services. Regional differences were apparent with private providers more prevalent in California and government owned operations more prevalent in Massachusetts. Rural areas were more likely to be served by volunteer firms.

There were distinct differences among firms of various provider types. Private firms in the survey were more likely to respond with ALS capabilities regardless of the service level of the run, although four out of five ambulance runs for private providers were still BLS as opposed to ALS. These firms also provided the majority of scheduled runs. Volunteer firms, by contrast, were more likely to provide a BLS service.

Overall, the sample enabled the estimation of a cost function for the industry which yielded results consistent with our expectations. One of the more important findings was that the ambulance industry is a decreasing cost industry for emergency services. In other words, MC is below average cost for every level of output. While these findings did not hold for government providers, it is likely that true capacity costs

(overhead) were underestimated for these providers. There is no reason to believe if costs had been fully expensed that this result would not also hold true for government providers. Other empirical findings were that average costs of private providers were higher than those of other provider types and average costs for rural providers were lower than those for urban providers. The implications of these findings and how these costs relate to Medicare reimbursement are discussed in more detail in the following section.

Section 5: Assessing Medicare Payment Adequacy for Ambulance Services

In order to address the objectives of the legislative mandate, in this section, charges allowed by Medicare for ambulance services are compared to the costs of providing those services. Comparisons are made across three dimensions: rural location, provider type, and level of service. First, the issue of payment adequacy is discussed in a general economic framework, given the knowledge of the ambulance industry gained from the Project HOPE Survey of Ambulance Providers. Next, the methodology used to compare provider costs to Medicare allowed charges is explained, and some caveats of the analysis are discussed. Finally, costs are compared to allowed charges by urban/rural location and then by provider type. An assessment of the adequacy of payment by level of service is incorporated in both of these last two discussions.

5.1 Background

Assessing the adequacy of the payments received by ambulance providers for services furnished to Medicare beneficiaries is complicated by a number of factors that distinguish this industry from others in medical care as well as other fields. With regard to industry structure, the provision of ambulance services is a natural spatial monopoly, as will be defined and discussed below. Because of this feature, a case can be made for the coordination and regulation of EMS at the community level, which has important implications for costs and pricing. Variations in local EMS standards, which have become characteristic of the industry, can also play an important role in variations in cost, but the implications are difficult to assess. Other unique industry

features -- such as variations in cost accounting practices among the different provider types, the frequent use of volunteer labor, and the high percentage of runs that do not result in patient transport -- all serve to make cost comparisons very difficult.

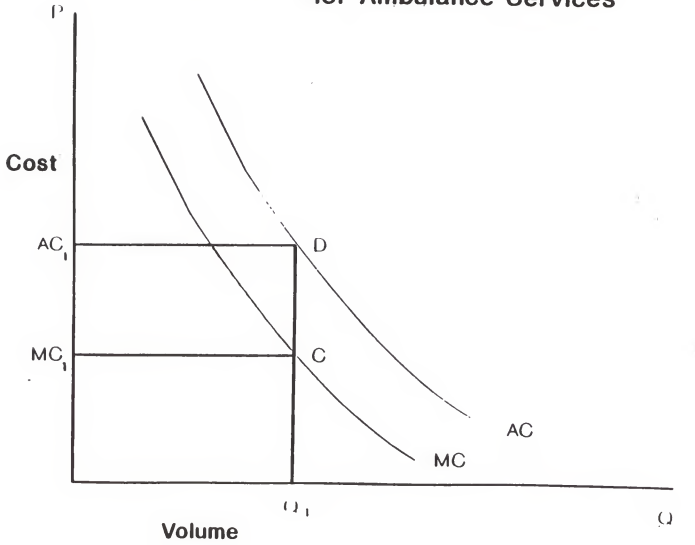
According to economic theory, under ideal competitive conditions firms in an industry would operate at the minimum point on their long-run average cost curve, and the market price would equal this long-run average cost, which is also equal to long-run MC. In combination with the aggregate demand curve for the industry, this would determine the aggregate amount of output, and thus the number of firms.

Among many simplifying assumptions, this simple economic model assumes that the firm operates at the minimum point on the average cost curve. In the context of the ambulance industry, the inadequacy of this simple framework is immediately clear. In particular, the empirical finding, in Section 4, that the ambulance firm operates on the declining portion of the average cost curve for emergency services raises fundamental questions regarding the optimal pricing of services.

Intuitively, an ambulance firm could provide transport at lower average cost if its resources were utilized at full capacity. However, because emergency care must be accessible within certain community norms, excess capacity must be maintained. In essence, there is a tradeoff between lower average costs and an acceptable response time.

This has three important implications with respect to pricing. First, as stated in Section 4, MC pricing, per se, would not be optimal. Since MC is below average cost, ambulance firms would take a loss for each trip provided. In a decreasing cost industry, either average cost pricing or marginal cost pricing with a public subsidy equal to the cost of maintaining the emergency response (excess) capacity are preferable. These options is illustrated in Figure 5-1. At the anticipated level of calls,

Figure 5-1. Marginal and Average Costs for Ambulance Services



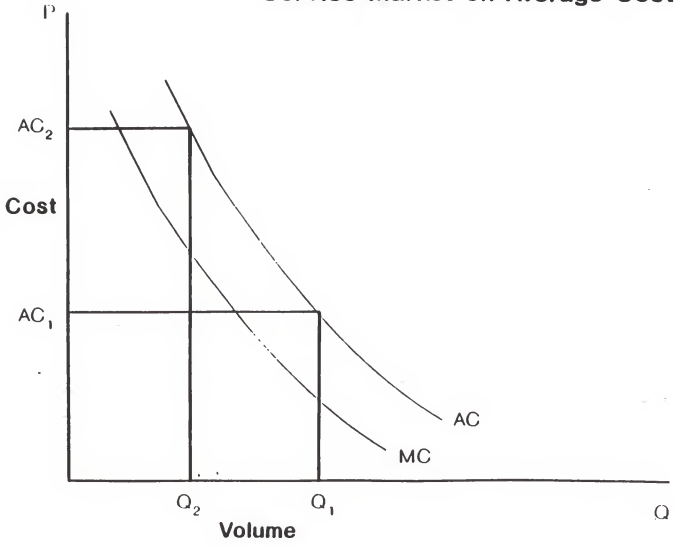
(Q_1), marginal cost, (MC_1), is less than average cost, (AC_1), by the amount CD. If marginal cost pricing were implemented, the amount of public subsidy that ensures provision of emergency services, given community response time norms, is equal to the shaded area.

Second, this implies that the ambulance industry is a natural spatial monopoly. In other words, within the geographic area delimited by response time requirements, it is optimal to allow only one firm to provide services. Allowing competition within geographical limits would drive up the average costs of service. This is immediately obvious in Figure 5-2, where allowing two firms to split the number of calls provided in an area reduces the number provided by either one to Q_2, increasing average cost to AC_2.

In fragmented markets marked by a variety of ambulance firms competing for the same patients, Medicare reimbursement may be adequate -- because it is partly based on historical charges -- but it is not likely to be optimal (i.e., reflect the lowest resource cost of producing a given amount of ambulance services). Community coordination and regulation of EMS under these circumstances can be beneficial. This is especially true when consumer demand is highly insensitive to price differences, as is likely to be the case for emergency services.

Third, the response time requirements established by the local community directly affect the cost of providing ambulance services. That is, for a given firm, more excess capacity must be maintained to respond more quickly to a call, or conversely, a larger number of firms are necessary to cover a given area. If local legislation is introduced to reduce emergency response times, this has the effect of reducing the market area covered by a firm (as in Figure 5.2 -- increasing AC_1 to AC_2). Other local mandates, such as those requiring a higher level of professional training for EMS staff, or

Figure 5-2. The Effect of Splitting an Ambulance Service Market on Average Costs



minimal equipment and vehicle capabilities, actually shift the cost curve upward, also resulting in increased costs for a given level of output.

This obviously raises difficult questions for the Medicare program, since no attempt has been made to define what are acceptable standards across the nation. For example, Medicare payments might exceed average costs in one community with lower standards, but be insufficient in another with higher standards. Which cost level is optimal has not yet been answered.

For this report, payment adequacy has been defined as the price level that equals or exceeds the average cost of providing an ambulance service. Theoretically, Medicare allowed charge at this amount will cover the "average" community standard. The issue of establishing minimum federal norms is reserved for further discussion in Section 7.

Even with this definition of payment adequacy in mind, it is clear from Section 4 that the true opportunity cost of providing ambulance services is difficult to measure for some provider types. For example, volunteer labor and free garage space are not truly without cost. However, these costs are not accounted for in ambulance firms' balance sheets. To the extent that charges also do not reflect these real service costs, debates about the adequacy of Medicare reimbursement are reduced to role of the federal government versus the local community in ensuring an adequate EMS capability. If some communities are more successful in motivating EMS volunteers or using local taxes to subsidize EMS operations than others, should the federal government still pay the "true" resource costs of this service to providers in that community? Certainly one would hesitate to have Medicare pay ambulance providers an amount that covers costs that would have been incurred had paid labor been used even though the service is provided by volunteer workers. This issue becomes more complex when ambulance charges from different provider types (e.g., volunteer and private) are pooled to

determine Medicare fee screens. The policy implications of these costs differences by provider type are analyzed further in Section 7.

Finally, the empirical finding that a large number of ambulance runs result in no transport also has implications for pricing. In the Project HOPE Survey of Ambulance Providers, for the average ambulance company 22 percent of all runs resulted in no transport. Similar to the impact of higher community EMS standards, this has the effect of shifting the average cost curve upwards or, in essence, increasing the average cost of an ambulance run (with transport). Thus, even if charges were set to cover the average cost of runs that result in transport, ambulance providers would still make a loss on every run. Again, the optimal level of no transport runs is at issue.

5.2 Methodology

In the discussion that follows, 1989 marginal and average industry costs are compared to average Medicare allowed charges for the four states included in the Survey of Ambulance Providers (Massachusetts, Michigan, Texas, and California). These cost estimates, also presented in Section 4, have been derived from cost functions by substituting weighted sample means for the dependent and independent variables. As a result, these estimates represent the costs for the "typical" (i.e., average) firm in each analytical category (i.e., urban/rural, provider type) in the four States. Because of the diversity in this industry, the following discussions also highlight deviations from the norm.

In order to produce estimates of Medicare allowed charges comparable to cost estimates, two adjustments to the data were made. Medicare's average allowed charge, obtained from 1987 Medicare claims data, was inflated to 1989 levels by the increase allowed under the IIC. Between 1987 and 1989, the IIC constrained increases in the lowest fee screen to four percent. This increase is lower than inflation in the general

economy and most likely reflects changes in average Medicare reimbursement that occurred in those years. In addition, the same weights used to develop representative cost estimates for the four States were applied to Medicare charge data for those States.

For this analysis, Medicare allowed charges were distinguished only by ALS and BLS levels of service. A separate reimbursement figure for nonemergency services was not produced. For the most part, this accurately reflects the way Medicare reimburses for ambulance services. Most Medicare carriers do not make a distinction between emergency and nonemergency runs although the HCPCS coding permits such a distinction. In other words, a scheduled BLS run is most often reimbursed at the same rate as an emergency BLS run by Medicare. In the four States analyzed, only the carrier serving the State of Texas distinguishes between emergency and nonemergency runs.

Separate cost estimates were produced for emergency ALS, emergency BLS, and nonemergency runs, for most analytical categories. In some cases, however, reliable estimates for this level of detail could not be obtained and a more aggregate cost model was specified. This was the case for urban providers, where cost estimates were not distinguished by emergency and nonemergency services, and volunteer providers where an average cost for all runs, regardless of the level of service, was produced.

There are three caveats to take into consideration when comparing Medicare allowed charges to costs. First, for the cost estimates, urban providers are defined as those located in communities with 25,000 or more residents. The definition used for the estimates of allowed charges is whether or not the beneficiary lives in the Census-defined MSA. Urban cost functions estimated using the MSA definition were not well-behaved and produced aberrant results. This is partly because, under the MSA definition, many providers serving small communities (of 3,000 to 5,000 persons),

sometimes located miles from the nearest urban center, were included as urban. Their cost profile and ownership characteristics, however, more closely resembled rural providers. While the definition used here for the cost estimates is more accurate, it was prohibitively expensive to compute alternative reimbursement estimates using this definition strictly. The implications of these different definitions of urban/rural location on the conclusions are discussed in greater detail in Section 5.3.

Second, it is important to note that estimates for the Medicare average allowed charge could not be controlled for provider characteristics, such as ownership type, size of firm, or service mix, as this information was not available in Medicare claims data. If the mix of providers reimbursed by Medicare differed from that in the sample, the adequacy of Medicare reimbursement might be over- or underestimated. The conclusion to this section further explores how this might affect the robustness of the results.

Third, one must bear in mind that both the cost and allowed charge data presented in the tables are estimates. Because the cost data were derived from a sample of ambulance providers, there are implicit standard errors associated with these estimates, which have not been calculated. The computation of these standard errors is difficult, as cost estimates have been derived mathematically from the cost equations specified and discussed further in Appendix F. The estimates of allowed charges are also based upon Project HOPE calculations of Medicare allowed charges for an ambulance run from BMAD claims data. These are also based on a sample, and as explained in Section 3, defined runs excluded persons who had more than one ambulance run in a day. With these limitations in mind, the words "approximately" and "appear to" are used throughout the report when comparing costs to allowed charges.

As a final note, it is important to keep in mind that Medicare allowed charges have been compared to the actual costs of service. No attempt has been made to impute costs for volunteer labor or subsidized garage space.

5.3 Payment Adequacy for Rural Providers

Many rural ambulance providers have claimed that the charges allowed by Medicare are not adequate. In fact, it has been argued that Medicare beneficiaries' access to ambulance services in rural areas is in jeopardy because Medicare's allowed charges are far below costs. In 1987, Medicare spending for ambulance services was indeed lower for rural beneficiaries than for their urban peers ($10 per rural beneficiary compared to $15 per urban beneficiary). Although Medicare's allowed charges per beneficiary were lower in rural areas, use rates were also lower (89 runs per 1,000 rural beneficiaries compared to 110 runs per 1,000 urban beneficiaries). While this might indicate access problems for rural residents, it may also reflect cultural differences. For example, rural residents may be more likely to be transported to the hospital by a relative or a neighbor than urban residents.

Despite complaints heard in the industry that the average cost of providing an ambulance run in a rural area exceeds that of runs provided in an urban area, results from the Survey of Ambulance Providers indicated the contrary. This finding could partly be explained by the fact that 35 percent of all rural firms in the survey had a predominantly volunteer staff (compared to 4 percent in urban areas). In addition, these providers were more likely to use EMTs in place of paramedics and were less likely to have ALS capabilities. Table 5-1 presents a comparison of the average incremental costs per run for rural and urban providers for the four states. The average incremental cost of an emergency ALS run for a rural provider was $103, while the average incremental cost of a BLS run was $97. These costs are lower than those for the urban provider, which were $240 for ALS and $123 for BLS runs.

Table 5-1 also compares Medicare allowed charges to costs for rural providers. Medicare's allowed charges were higher than average costs for all levels of service for rural providers. Even if one factors in an additional margin to cover runs that do not result in transport (based on the survey finding that for the average rural ambulance company 20 percent of calls do not result in transport), Medicare allowed charges are higher than the levels of costs presented here.

Despite the apparent adequacy of the allowed charges, it was clear from analyzing Medicare claims data that substantially fewer ambulance claims were accepted on assignment by rural providers than by urban providers (73 percent versus 93 percent). This may imply that fewer (although still a majority of) rural providers find Medicare reimbursement adequate than urban providers.

As emphasized throughout this report, the industry is marked by diversity. Although the objective is not to establish Medicare payment levels that cover costs for all providers (thus encouraging inefficient providers), it is worthwhile to explore just how typical this "typical" firm is. Based on the cost function analysis in Section 4, the most important factors determining average costs per rural call were the volume and mix of ambulance services provided in a year. Another important factor was the distance traveled. The "typical" rural firm in the survey averaged slightly more than 600 calls per year and 48 percent of all transport runs were BLS. The average distance traveled for an ambulance was 44 miles.

TABLE 5-1

Marginal Cost (MC) and Average Incremental Cost (AIC) by Urban/Rural Location Compared to Average Medicare's Allowed Charge in Four States, 1989*

Provider Location	Service	Costs		Average Allowed Charge
		MC	AIC	
Urban**	ALS	123	240	206
Urban	BLS	66	123	136
Rural	Emerg. ALS	78	103	207
Rural	Emerg. BLS	82	97	137
Rural	Non-emerg.	23	35	

Source: Project HOPE Survey of Ambulance Providers, 1989 and Project HOPE calculations from the 1987 BMAD Beneficiary file.

Notes: * Allowed Charges data have been inflated to 1989 levels by the IIC.

** Separate cost estimates by emerg. ALS, emerg. BLS, and nonemergency services could not be produced for urban providers.

While the average cost of an emergency BLS run for the "typical" rural firm was $97, approximately ten percent of all rural ambulance firms in the survey averaged more than $400 per call (both BLS and ALS). In fact, rural firms comprised the bulk of cost outliers in the survey. These high-cost rural providers were more likely to be small (averaging fewer than 400 calls per year) and were also more likely to transport patients long distances (averaging 150 miles per trip). If these providers differ substantially from others in the same locality and if mileage add-ons are not adequate (a factor not examined in this report), Medicare payment would not be adequate.

Another important consideration is the mix of staff. One of the reasons many rural firms in the survey could provide ambulance services at lower cost than their urban counterparts was their reliance on volunteer staff. In contrast to this, however, rural ambulance services in California were most often provided by private firms with a predominantly paid staff. In that state, rural ambulance services cost more than urban services, on average. Medicare's allowed charges for private providers (who use a predominantly paid staff) in a locality with a high proportion of volunteer providers is unlikely to be adequate. The data in Table 4-16 showed that the average cost of an emergency BLS call for a private provider ($171) was more than twice as high as the cost for all calls provided by a volunteer provider ($67). Similarly, in areas where volunteer services are being replaced by services with partly paid or all paid staff, the restrictiveness of the IIC, which is based on historical charge patterns, could result in Medicare allowed charges being below costs.

Although not a focus of the Congressional mandate, it is worthy of note that average Medicare allowed charges for urban providers was lower than estimated costs for ALS services ($206 compared to $240). Oddly, urban providers (with the exception of private providers) have not levied substantial complaints about the adequacy of Medicare payment for ambulance services.

One possible explanation for the paucity of complaints from urban providers is that, in urban areas, government owned and operated firms provide a high percentage of the ALS services. As discussed earlier, another approach to adequate compensation for ambulance services would be to provide a government subsidy sufficient to cover the response capability (excess capacity costs) and to pay providers an amount equal to the marginal cost per run. In fact, Medicare's average allowed charge for ALS services in urban areas ($206) is higher than the marginal cost of the run ($123). As noted in Section 3, many providers receive government subsidies for their ambulance operations. The adequacy of Medicare allowed charges, in this case, rests upon the extent to which the provision of urban emergency ALS services is subsidized.

As mentioned in Section 5.2, different urban/rural definitions were used for the allowed charges estimates (MSA/nonMSA) than were used for the cost estimates (where communities were differentiated by having populations greater than 25,000 or equal to or/less than 25,000). However, because the cost profiles of the urban providers reclassified under the second definition were similar to rural providers using the MSA definition, rural cost estimates are unlikely to have changed. The same is not true for urban providers, where reclassifying some providers within an MSA, but serving small communities (who were often volunteer firms), as rural, would most likely have had the effect of raising average costs for the remaining urban providers. Most likely, using the community-size definition for Medicare allowed charges would have raised the average charge levels. Thus, whether Medicare's allowed charges may be more adequate (than shown) for ALS services is an empirical question that is beyond the scope of this project.

5.4 Payment Adequacy by Type of Provider

Table 5-2 compares marginal and average costs to the average charge allowed by Medicare by type of provider. Recall that it was not possible to identify provider types

in the Medicare claims data. Consequently, this table compares costs by provider type obtained from the Survey of Ambulance Providers to the average Medicare allowed charge across all provider types in the four states.

In general, the "typical" government and volunteer ambulance providers, which account for the large majority of ambulance providers in the United States, have average charges allowed by Medicare at a level greater than or roughly the same as the cost of providing an ambulance run. This is true regardless of the level of service, and even when adjusting for no transport runs.

The same is not true for the "typical" private provider, which displays costs that exceed Medicare allowed charges for both ALS and BLS emergency runs ($250 compared to $207 for an emergency ALS run and $171 compared to $135 for an emergency BLS run).

Several factors contribute to higher costs for private providers. First, both government and volunteer providers are more likely to have an all- or partly-volunteer staff. Second, it is highly likely that full cost accounting of ambulance services is not done by government agencies. The fact that expenses for office and garage space were often relatively low for government providers leads one to believe that part or all of these costs may have been borne by some other government agency. Finally, private providers were much more likely to have ALS capabilities. In particular, they were much more likely to provide paramedics on a call, regardless of the level of service.

Despite the fact that average Medicare allowed charges were somewhat below cost estimates for private providers, anecdotal accounts suggest that private ambulance providers account for a large volume of ambulance services provided to

TABLE 5-2

Marginal Cost (MC) and Average Incremental Cost (AIC) by Provider Type Compared to Average Medicare Allowed Charge in Four States, 1989*

Provider Type	Service	Costs		Average Allowed Charge
		MC	AIC	
Private	Emer. ALS	154	250	207
Private	Emer. BLS	105	171	135
Private	Nonemerg.	89	132	***
Government	Emer. ALS	141	127	207
Government	Emer. BLS	61	53	135
Government	Nonemerg.	47	50	***
Volunteer	All	49	67	135****

Source: Project HOPE Survey of Ambulance Providers, 1989 and Project HOPE calculations from the 1987 BMAD Beneficiary file.

Notes: * Reimbursement data have been inflated to 1989 levels by the IIC.

** Provider type is not available in Medicare claims data. Allowed charge data presented represent an average for all providers.

*** Because most Medicare carriers do not distinguish between emergency and nonemergency runs a seperate allowed charge figure for nonemergency runs has not been calculated.

**** Separate cost estimates by level of service could not be produced for volunteer providers. Because these firms mainly provide BLS services, costs have been compared to the average BLS reimbursement for Medicare.

Medicare beneficiaries. (This was not a testable hypothesis since provider-type was not identifiable in the Medicare claims data.) A possible explanation for this apparent anomaly is that private providers are supplying more of the nonemergency (scheduled) runs to Medicare patients. Most Medicare carriers do not distinguish between scheduled and unscheduled runs in reimbursing for ambulance services. As a result, the average allowed charge ($207 for an ALS run and $135 for a BLS run) exceeded or was roughly comparable to the average costs of providing scheduled runs ($132). Empirical results showed almost 90 percent of all scheduled runs in the Survey of Ambulance Providers were provided by private firms. Nearly 55 percent of all transport runs provided by the "typical" private firm represented in these cost estimates were scheduled.

5.5 Conclusion

The preceding analysis indicates that, on average, Medicare allowed charges for ambulance services, in the four sampled States, were roughly comparable to average costs for rural providers and for most provider types. This is true regardless of the level of service. The one exception is private providers where average Medicare allowed charges are lower than costs for emergency services. For these firms, however, Medicare reimbursement exceeded the MC of providing scheduled ambulance runs. This result is consistent with the empirical finding that a large proportion of ambulance services provided by private firms are scheduled runs.

Although these conclusions are consistent with anecdotal reports about the ambulance industry, there are some caveats to keep in mind. First, it was not possible to control average Medicare reimbursement for such differences as size of provider, provider type, or average distance of calls. If, for example, the average firm reimbursed by Medicare differed from the "typical" firm represented in the

sample from which the cost function was generated, results may have been different. In most cases, however, the direction of these differences is clear. For example, it is likely that most Medicare beneficiaries would be served by the larger firms than these "typical" firms (e.g., in one urban area one very large firm provided the vast majority of services). Cost estimates derived for this larger firm would be lower, thus reinforcing the conclusion that, in general, Medicare allowed charges are adequate.

It is notable that average Medicare allowed charges for rural firms are roughly equal to that for urban firms in these four States. This result differs from Medicare reimbursement by urban/rural location for the nation as a whole. Factors such as greater average distances for an average ambulance run in States like Texas and California could account for this. Similarly, the higher proportion of private providers serving rural areas in California could account for this. Both of these factors could be reflected in the cost estimates. However, it is possible that Medicare beneficiaries living in rural areas are served by a higher proportion of private providers in these four States than those represented in the sample. In this case, the average cost curve of the "typical" firm serving Medicare beneficiaries would shift upwards, weakening the argument that average Medicare allowed charges are adequate for rural providers.

Due to the diversity of the industry, the deviations from the "typical" firms represented in the cost analysis are also important to consider. Based on the cost analysis, firms that provide relatively few calls in a given year and that serve large, sparsely-populated areas are likely to be cost outliers, with average costs substantially greater than this "typical" firm. If these firms are atypical of other providers in the Medicare carrier's locality, Medicare allowed charges may be below average costs.

Similarly, the implementation by the Medicare program of the IIC to constrain payments in 1985 may have led to situations where allowed charges are now below average costs. Under this method of determining fee screens, reimbursement is based on the lowest of the previous year's fee screens and a restrictive inflation factor. Average costs are most likely to exceed Medicare allowed charges in communities where the mix in provider types, the mix in paid versus volunteer staff, or community standards for EMS services have changed substantially since 1985.

As a final caveat, what is true for the "typical" firms in these four States, may not be true for the nation. The intent of analysis was to select a diverse sample by provider type and urban/rural location in order to test the hypothesis that Medicare's allowed charges for ambulance services were adequate. Based on these results, allowed charges appear to be adequate, on average in these four States, with the exceptions of payment to private providers for emergency ambulance services and payment to urban providers for emergency ALS services.

Despite the limited sample, these empirical findings accord with our intuitive understanding about the industry based on the literature presented in Section 2. Volunteer firms are predominant in rural areas. The fact that a large proportion of their staff are not paid leads to lower average costs for rural services. Private providers, although representing a small portion of the sample, provide a large volume of services. A large majority of these services are scheduled runs. Because private firms have a higher proportion of paid staff, more frequently provide ALS capabilities, and are most likely to include all costs in their accounting data, costs for these types of providers were higher than for others.

Section 6: Medicaid Survey

6.1 Methodology

The adequacy and/or appropriateness of Medicare rates was also addressed by analyzing and contrasting Medicare and Medicaid payment rates. To address this issue, a telephone survey of selected Medicaid programs was conducted. While the most conclusive method of comparing Medicare and Medicaid rates would be to gather data on all State Medicaid programs, cost constraints and concerns about the time that would be required to obtain OMB clearance limited the Medicaid Survey to eight States. Since Medicaid programs vary dramatically from State to State, it would be difficult to generalize about how Medicaid reimbursement compares to Medicare, even with a 50-State survey. Consequently, the States chosen for the Medicaid Survey were selected in an attempt to identify the range of ambulance reimbursement policies used by Medicaid programs.

The eight States selected for the Medicaid analysis were: California, Georgia, Iowa, Massachusetts, Michigan, New Mexico, New York, and Texas. Four of these states (California, Massachusetts, Michigan, and Texas) were selected because they were part of the Survey of Ambulance Providers and because they represent the four major regions of the United States (East, Midwest, South, and West). The remaining four states (Georgia, Iowa, New Mexico, and New York) were also selected for their geographic diversity. In addition, the eight States in the Medicaid Survey encompass different types and concentrations of urban and rural areas. New York and Texas were specifically included in the sample, since they were known to set reimbursement rates for ambulance providers on a regional instead of a statewide basis. Similarly, Georgia and New Mexico were chosen because they recently changed their ambulance reimbursement policies.

Each of the eight State Medicaid programs were called to identify the appropriate person to question concerning ambulance reimbursement. In most States, the researchers were referred to Medicaid Transportation Experts. An interview guide was used to elicit information on eligibility and coverage restrictions on ambulance services, the rate structure and level of Medicaid reimbursement in 1989, and recent or anticipated changes in reimbursement policies.

Although this is not a comprehensive analysis of all Medicaid programs, a previous study, A 50-State Review of Medicaid Transportation Services, conducted by the Intergovernmental Health Policy Project (IHPP) of George Washington University in 1985, was used for comparison to the Medicaid Survey results. The IHPP report allowed some insight into changes in both coverage and reimbursement policies and rates for State programs between 1985 and 1989. This report also provided some indication of whether the eight States in the Medicaid Survey represented the norm in terms of ambulance reimbursement policies.

6.2 Intergovernmental Health Policy Project (IHPP) Study

The IHPP Study focused on the broader issue of transportation services covered by Medicaid programs. While this study did not provide complete information for all Medicaid ambulance policies or rates, it did allow for a general evaluation of the range of ambulance reimbursement policies across all 50 States. In addition, a comparison of the IHPP data to the information obtained from surveys of the eight Medicaid programs indicated how ambulance rates and/or benefits have changed since 1985.

The IHPP report did not present consistent information on ambulance reimbursement and coverage across States. In addition, where ambulance rates were

quoted, they were not distinguished by level of service (ALS or BLS). As a result, it was difficult to generalize about Medicaid ambulance policies across States based on this report. One common feature is that, unlike Medicare, most Medicaid programs will reimburse for a variety of transportation services in addition to ambulance transport. Covered transportation services may include, for example: wheelchair vans, taxis, public transportation, and private automobiles. Medicaid reimbursement for these services, similar to that for ambulance services, is based on a documented need for medically-necessary transportation. However, in 1985, as was true in the 1989 Medicaid Survey, transportation policies were marked by diversity.

According to the 1985 IHPP survey, the types of ambulance services reimbursed may include base rates for ground transportation, air ambulance services, mileage, and waiting times. Thirty-four States reimbursed a flat fee base rate for an ambulance trip. These base rates varied widely among Medicaid programs in the 19 States with listed rates, from $30 in New Jersey to $87 in Connecticut. Forty-four States covered air ambulance transportation. In most States, Medicaid reimbursed for air services if either the patient's condition prevented using any other type of transportation or the nearest appropriate hospital was inaccessible by ground transport.

Charges additional to a base ambulance rate were also often allowed by Medicaid programs in 1985. All but two States (Alaska and Wisconsin) reimbursed for mileage. In the 18 States with mileage rates listed for emergency transportation services, the reimbursement per mile ranged from $.20 per mile in North Dakota to $3.18 per mile in California. Of the 14 States that restricted the number of reimbursable miles, most only required that transportation be provided to the nearest available and appropriate provider. Other States required prior authorization for interstate transport or transports exceeding a certain number of miles (ranging from 50 miles one way to 400 miles total).

Twenty-six Medicaid programs reimbursed providers for time spent waiting for patients. Most often, these reimbursements were based on 15- and 30-minute increments, often after an initial period of time had elapsed. The number of allowed hours of reimbursable waiting time was somewhat restricted in 16 States. Maximum reimbursable waiting time ranged from 30 minutes to six hours. If a return trip was more cost effective, neither Idaho nor Washington would reimburse for ambulance waiting time.

Some Medicaid programs had other restrictions on various aspects of ambulance services in 1985. For example, five States (Alabama, Georgia, Missouri, Pennsylvania, and Utah) restricted the number of trips allowed per recipient. Georgia restricted the number of nonemergency ambulance trips to one per day and other transportation to two trips per day. Missouri only offered emergency transportation and limited this to one trip per day. In most States, non-emergency transportation, when provided, also required prior authorization.

An IHPP addendum to the study indicated some changes had occurred in Medicaid programs since 1985. The most salient were transportation-related cost containment measures. Both Connecticut and Oregon have passed laws to permit competitive bidding for ambulance services on a Preferred Provider Organization basis.

6.3 Project HOPE Medicaid Survey

As previously mentioned, Project HOPE's survey of eight Medicaid programs provided more detailed information on current ambulance services coverage policies and Fiscal Year 1989 rate structure and reimbursement levels in California, Georgia,

Iowa, Massachusetts, Michigan, New Mexico, New York, and Texas. Information was also obtained on how reimbursement had changed and any perceived future changes.

6.3.1 Coverage Policies

All Medicaid beneficiaries across the United States were eligible in FY 1989 to receive medically necessary Medicaid-reimbursed emergency ambulance services. Eligibility for Medicaid programs varied between States. Generally, Medicaid eligibility includes those persons who were categorically eligible and those who were medically needy.

Categorical eligibility is based on receipt of Aid to Families with Dependent Children or Supplemental Security Income benefits, provided to members of families with dependent children and older and disabled persons, respectively. Categorically eligible beneficiaries must also have been below State-determined poverty thresholds. In addition, some States covered people who do not receive funds from cash assistance programs but are determined to be medically needy. These people are typically near the poverty level and have relatively large medical expenses compared to their incomes. In the eight states surveyed, all but one, New Mexico, covered both the categorically and medically needy. New Mexico limited Medicaid eligibility to the categorically needy.

Medicaid programs vary in the level of transportation services they will cover. While some states make a distinction between and reimburse differently for ALS and BLS services, others treat the two as one type of service and reimburse the same amount. Four of the eight States surveyed differentiated between ALS and BLS ambulance services. These included Iowa, Michigan, New Mexico, and New York. Definitions of ALS focused on the services and necessary procedures performed. This

is in contrast to the Medicare definition, which focuses on the type of vehicle used. These services varied by state, but included the use of endotracheal procedures, defibrillation techniques, and EKG. California, Georgia, Massachusetts, and Texas did not make a distinction between levels of ambulance services. These Medicaid programs reimbursed at a BLS level regardless of the procedures performed.

Medicaid programs reimbursed ambulance services in a number of different ways. Two States within our survey sample, New York and Texas, reimbursed on a region-specific basis. New York is divided into 58 local districts, each of which is responsible for setting rates and reimbursement policies for itself. Texas is divided into three regions. Each of these regions has unique reimbursement rates. New Mexico's Medicaid program set its maximum ambulance reimbursement at the Medicare prevailing charge level which allows for different rates for individual providers. The remaining five States (California, Georgia, Iowa, Massachusetts, and Michigan) established ambulance rates for the entire State.

6.3.2 Rate Structure

All eight Medicaid programs surveyed reimbursed ambulance providers according to a base rate for an ambulance trip. As mentioned previously, half of these programs paid a higher base rate for ALS services. BLS base rates ranged from a low of about $50 in Michigan to a high of $150 in the highest rate region of New York. This wide variation of rates was even found within the State of New York, where reimbursement is set regionally. In that State, BLS base rates varied from $50 to $150. None of the eight Medicaid programs relied completely on this base rate as an all-inclusive flat rate for ambulance services. Instead, each State reimbursed separately for some additional direct costs to ambulance providers. However, the types of allowed additional services to the ambulance base rate varied among the eight States. Additionally-reimbursable

services included, for example, mileage, waiting time, oxygen, disposable supplies, drugs, and neonatal services. The types of ambulance services reimbursed by each of the eight Medicaid programs surveyed are presented in Table 6-1.

Mileage was the only additional ambulance charge reimbursed in all of the eight Medicaid programs surveyed. However, reimbursement ranged from first mile coverage in California, Iowa, Michigan, and Texas to coverage only for distance travelled over ten miles in Georgia and Massachusetts. The dollar amount per mile also varied from a low of $0.75 in Massachusetts to a maximum allowable charge of $4.00 in New Mexico. Unlike most Medicare carriers, none of the eight Medicaid programs identified different mileage rates for ALS versus BLS ambulance trips.

Six of the eight Medicaid programs reimbursed separately for oxygen administered during an ambulance trip. However, the method by which these programs paid for oxygen varies from State to State. Georgia, Iowa, and Texas reimbursed for necessary oxygen using a flat fee. This fee ranged from $10 in Iowa to $16 in Georgia. California paid an established rate per tank of oxygen used ($10), while New Mexico paid a maximum of $15 for oxygen administration and additionally reimbursed for the supply of oxygen used. New York's reimbursement for oxygen services varied by district.

Six States also provided additional reimbursement for waiting time for at least some Medicaid ambulance services. In California and Michigan programs, waiting time was paid only for certain types of ambulance runs, such as air ambulance or neonatal transfers. New Mexico reimbursed waiting time for ground ambulance transport if the time was necessary to stabilize the patient. In Georgia, Iowa, New Mexico, and Texas, waiting time reimbursement was offered for all types of ambulance runs. The method

Table 6-1. Summary of Medicaid Reimbursement Rate Structure, by Eight-State Sample, 1989

State	Separate ALS/BLS Reimbursement	Statewide (S) or Regional (R) Rates	Mileage	Waiting Time	Oxygen	Disposable Supplies	Drugs	Air Ambulance	Neonatal Services
California		S	X	X*	X			X*	X
Georgia		S	X	X	X			X*	
Iowa	X	S	X	X	X	X		X	X
Massachusetts		S	X						
Michigan	X	S	X	X*					X
New Mexico	X	S	X	X*	X	X	X	X	
New York	X	R	X		X			X	
Texas		S	X	X	X	X		X	

* Services available in restricted circumstances.

in which ambulance providers were paid for time spent waiting also varied across Medicaid programs. California, Iowa, and Massachusetts reimbursed for increments of time, while Georgia and Texas paid a set fee, regardless of time spent waiting.

In addition, three States, California, Iowa, and Michigan, noted that they paid a separate fee schedule for neonatal ambulance services. Another three Medicaid programs, Iowa, New Mexico, and Texas, paid for the costs of disposable supplies used during ambulance trips. Only New Mexico's Medicaid program separately reimbursed ambulance providers for drugs.

The two most restrictive States in terms of allowed billing for costs additional to a base rate were Massachusetts and Michigan. In Massachusetts, additional reimbursement is allowed only for mileage, while Michigan reimburses for both mileage and waiting time for a neonatal transfer. New Mexico and Iowa were the two States offering the greatest number of allowable additional charges.

As indicated in the IHPP Survey, Medicaid programs generally reimbursed for some types of nonemergency transportation, in addition to covering ambulance services. The mode of transportation covered varied across States, but typically included automobiles, taxis, wheelchair vans, and ambu-vans. All eight States in this survey had some provision for reimbursing nonemergency transportation but the method and amount varied. Diverse approaches were exemplified by the States of New Mexico, Massachusetts, and Iowa. New Mexico reimbursed nonemergency services at the same rate as BLS services, unless the established tariff rate was lower. Massachusetts reimbursed nonemergency, nonambulance transportation as an administrative expense to the Medicaid program instead of a medical expense. In Massachusetts, the base rate for nonambulance transport was one-fourth the amount for a BLS ambulance base rate ($21 for a wheelchair car, compared to $80). Iowa did not reimburse providers of

nonemergency ambulance services, but some reimbursement for nonambulance medical transportation was available to beneficiaries. In these cases, the beneficiary was reimbursed $0.21 per mile for nonambulance transport.

6.3.3 Comparison to Medicare Allowed Charges

Medicaid reimbursement rates for certain ambulance services in the eight States were compared to the average charges by selected procedure codes allowed by Medicare. Rather than develop a composite for States with more than one Medicare carrier, an average allowed charges by procedure code was calculated for each carrier separately. Average allowed charges used for Medicare services were calculated from the 1987 BMAD Procedure File. In order to compare these 1987 Medicare rates to the FY 1989 Medicaid reimbursement rates obtained from State Medicaid programs, the Medicare numbers were inflated to 1989 using the IIC. Using this index, the 1987 average charges allowed by Medicare were increased by 4 percent. The average charges allowed by Medicare carriers are compared to average Medicaid reimbursement by state in Table 6-2.

It is difficult to conclude how the total payment of an average Medicare or Medicaid ambulance claim would compare since data on the total reimbursement of a typical Medicaid ambulance run are not readily available. That is, data were available only for certain procedures; thus the effect of more restrictive policies related to reimbursement for services additional to the base rate could not be examined. Despite these limits, this approach provides a general indication of the comparability of Medicare and Medicaid rates for specific components of ambulance service.

Rates obtained from three programs (New Mexico, Georgia, and New York) were not strictly comparable to Medicare allowed charges. For example, in New Mexico and Georgia information was only available on maximum allowed charges. These rate screens are presented in Table 6-2. The maximum allowed Medicaid reimbursement for a BLS base rate was $90 in both State programs (Medicare's prevailing for this service), while Medicare's average allowed charge for BLS base rate services was $68 and $56 in New Mexico and Georgia, respectively. Other rates were also significantly higher than Medicare allowed charges, but no conclusion can be drawn as it is likely that average Medicaid reimbursement for both State programs were well below these maximum allowed charges.

New York is divided into 58 local Medicaid districts, based on New York's counties. Each Medicaid district established its own base reimbursement rates, which were then approved at the State level. While an average reimbursement across all 58 Medicaid districts could not be obtained, BLS base rate reimbursement ranged from $50 to $150 and ALS base rates ranged from $85 to $210. Empire BC/BS (which accounted for 83 percent of Medicare allowed charges in New York) was $105 (BLS) and $179 (ALS), slightly higher than the midpoint of the Medicaid ranges in New York.

Medicaid programs are generally known for their restrictiveness in reimbursement for all medical services. Therefore, it is not surprising that three (California, Massachusetts, and Michigan) of the five programs that could be directly compared to Medicare allowed charges paid at levels substantially below Medicare for base ambulance rates. In the California and Massachusetts Medicaid programs, distinctions were not made for ALS and BLS services. However, the average Medicaid reimbursements for emergency ambulance transport were 14 and 34 percent below the average Medicare BLS base rate, respectively ($106 compared to a weighted average of $123 in California and $80 compared to $121 in Massachusetts). Mileage

reimbursements were also lower in these State programs than those allowed by Medicare. In the Michigan program, where separate rate screens had been established for BLS and ALS services, Medicaid payment was quite restrictive. Reimbursements averaged 45 percent lower for BLS base rates and 66 percent lower for ALS base rates than Medicare ($51 versus $92 for Medicare BLS base rates and $61 versus $180 for Medicare ALS base rates). Mileage rates in the Michigan Medicaid program were not significantly higher than those of Medicare.

Medicaid programs in the two remaining states (Iowa and Texas) paid rates that were higher than allowed by Medicare. Texas paid, on average, 31 percent more than Medicare for the BLS base rate ($101 compared to Medicare's $77). As this program did not reimburse separately for an ALS trip, it is possible that averaging in higher ALS charges to the charge profile (Texas uses the usual and customary charge method of determining fee screens) raised average reimbursement levels. To test this hypothesis, a weighted average Medicare allowed charge was constructed, based on the number of ALS and BLS runs provided to Medicare beneficiaries Texas in 1987 (Project HOPE calculations from the BMAD Beneficiary file). However, Medicaid reimbursement ($101) was still substantially higher than this weighted average ($88). In Iowa, the Medicaid program reimbursed at levels 16 and 8 percent above the average Medicare allowed charge for BLS and ALS base rates, respectively.

These findings in Iowa and Texas may be misleading due to the greater number of ambulance-related additional services covered by the Medicare program. For example, neither of these Medicaid programs reimbursed separately for emergency drugs administered during transport, an item allowed by Medicare. Considering this and other allowable additions, Medicare may be allowing higher charges per ambulance run than the two Medicaid programs. However, both of these Medicaid programs reimbursed extra for items that could substantially increase the total cost of an

ambulance trip: mileage and oxygen. In Texas, rates were determined on a usual, customary and reasonable charge basis, similar to the method used by Medicare. In Iowa, a Statewide fee schedule had been established in 1987 based on the 74th percentile of prevailing charges.

While most of the States surveyed had legislation mandating that fee schedules be updated annually, according to information obtained through responses to the Project HOPE Medicaid survey and through comparison to the 1985 IHPP report, few had recently increased rates. California's Medicaid official stated that Medicaid reimbursement rates had not been updated since 1987; however, current rates are at the same level of those quoted in the 1985 IHPP report. While Massachusetts' rate-setting statute requires updated reimbursement schedules every 2 years, however, a scheduled January 1, 1991 increase will be the first update in several years. Texas updates reimbursement rates in conjunction with Medicare's IIC updates, based on available funding. Following implementation of a new fee schedule in July 1987, Iowa froze its reimbursement rates until FY 1990, whereupon a 2.25% increase was allowed.

6.3.4 Changes in Reimbursement Structure

Four of the state Medicaid programs either recently implemented changes or face potential future changes in their reimbursement structure. Georgia was considering changing its reimbursement structure to distinguish base rates between ALS and BLS services, although the earliest a change would be implemented is the beginning of 1992. Massachusetts was also considering separate reimbursement for ALS services in addition to reimbursement for transport by air, although current budget constraints make early adoption unlikely. In FY 1990, the Michigan Medicaid program plans to define parameters for a cost study of ambulance services in Michigan. The study is to

funded by ambulance providers, and, barring objections from the State legislature, Michigan plans to set reimbursement at 76 percent of the determined true cost of services. In early 1990, New Mexico converted to a new reimbursement system, limiting the maximum allowed reimbursement to the Medicare prevailing fee. This change was initiated because under the previous system, New Mexico was reimbursing at a higher rate than the Medicare program. Previously, the New Mexico Medicaid program reimbursed at State-established tariffs that were based upon provider-specific pricing reports.

6.4 Conclusion

As part of the Congressionally-mandated assessment of the adequacy of Medicare payments for ambulance services, Medicare rates were compared to Medicaid rates. Although our study limited this comparison to an eight-State survey and a review of an earlier Medicaid transportation survey, it is not clear whether a broader study would have yielded greater insights. First, it is questionable whether Medicaid is the appropriate benchmark for comparison. As Medicaid programs have an established reputation of setting highly restrictive reimbursement rates, higher Medicare allowed charges for these services do not necessarily imply that Medicare rates are "adequate" (as defined as the level where average reimbursement equals long-run average costs).

On the other hand, depending upon how Medicaid programs establish rates, if Medicare allowed charges are below Medicaid rates, this does not necessarily imply that Medicare rates are "not adequate". For example, the inherently inflationary nature of fee-for-service systems coupled with the natural spatial monopoly characteristic of the ambulance industry can lead to a situation where charges are substantially higher than costs. In New Mexico, State-established tariffs for ambulance services were previously based on ambulance provider pricing reports. In Texas and Iowa, the usual, customary,

and reasonable method of establishing maximum allowable charges was or is used. In all instances, this led to situations where average reimbursement for these Medicaid programs was higher than Medicare. The New Mexico program decided that they were paying at levels that were "too high" and, instead, adopted Medicare's prevailing charge method. In Iowa, the usual, customary and reasonable method of paying for ambulance services was dropped altogether in favor of a Statewide fee schedule. It is unlikely, given the restrictions on fee increases, that Medicaid reimbursement has remained above Medicare reimbursement.

Some common features of Medicaid transportation programs that may be relevant to Medicare reimbursement policy for ambulance services were:

- Medicaid programs tended to be more restrictive than Medicare in terms of allowances for additionally reimbursable services with most programs only allowing more for oxygen and mileage;
- In addition to limiting the types of additional services reimbursed, several Medicaid programs set restrictions on the number of trips in a day and reimbursed mileage only after a certain minimum (e.g., 10 miles);
- For those programs that do reimburse for separate levels of service, the definition focused on services and procedures performed and not the type of vehicle used;
- None of the eight programs surveyed reimbursed different rates for ALS and BLS mileage; and
- All Medicaid programs surveyed had some provisions to reimburse for transportation in vehicles other than an ambulance. Several of these had established lower rates for nonambulance transport.

Section 7: Summary and Policy Recommendations

This study presents the results of the first comprehensive examination of ambulance services provided under Medicare. One of the objectives of the study--to analyze aggregate spending and billing patterns--was quite general, responding to a variety of research and policy interests within HCFA. The next two objectives--to compare costs to claims and to compare Medicare and Medicaid payments--were very specific, responding to the particular question, "Is Medicare payment for ambulance services adequate?"

While this report cannot provide the definitive answer to all questions raised within HCFA related to Medicare payments for ambulance services, it does provide answers to some and guidance to HCFA that will help in the future in monitoring and analyzing both Medicare ambulance expenditures and the ambulance industry. Important insights have also been gained that can help guide Medicare policies for ambulance services. In this section, the findings are first summarized. The study concludes with recommendations of how to structure Medicare payments for ambulance services.

7.1 General Insights from the Analysis of Medicare Claims Data

The analysis of Medicare claims data underscored general findings that the

ambulance industry is marked by diversity. Average allowed charges for ambulance trips varied widely both within and across Medicare carriers. Average allowed charges for BLS runs ranged from a low of $56 in West Virginia, to a high of $189 in Massachusetts. Average allowed charges for ALS runs varied from $60 in Washington, D.C. to a high of $344 in Oklahoma.

Service mix also varied by region, with ambulance providers in the West more likely to supply an ALS service to Medicare beneficiaries than those in the East. ALS runs provided to Medicare beneficiaries were roughly twice as expensive as BLS runs. Medicare has not adopted uniform protocols regarding when advanced life support services are medically warranted. Considering: 1) that Medicare spent an estimated $60 million more in 1987 on ALS runs than if all services provided had been BLS and 2) that there is disagreement in the literature about the medical effectiveness of ALS services, the development of medical protocols may produce savings without jeopardizing emergency service quality. This is an area deserving further research.

Charges allowed for services in addition to an ambulance base rate, increased the average allowed charges for BLS and ALS runs by 42 and 74 percent, respectively. Mileage charges contributed the most to the price of a run, with oxygen second. The relative importance of these additional covered services to the overall price of an ambulance run varied among the carriers. While most carriers paid an all-inclusive rate for ALS services, some carriers predominantly used the noninclusive rate.

Although this study was not designed to evaluate whether unbundling of services was economically justifiable, results from the Survey of Ambulance Providers, discussed later, suggest that mileage add-ons are essential for ambulance providers in rural areas. The analysis of payment adequacy also suggested that when including all of these add-ons services Medicare's allowed charges were roughly comparable to costs. Some providers may be unbundling services because what Medicare allows for base rates are seen as below the average costs of providing an ambulance run.

While most Medicare carriers do not distinguish between scheduled and unscheduled runs in establishing charges for ambulance services, it is assumed that persons that receive more than one ambulance trip in a day are likely to represent a high proportion of scheduled runs. Persons with ESRD were disproportionately represented among this group. Overall, persons with ESRD were nearly ten times more likely to use ambulance services than the general Medicare population. A separate study on the use of ambulance services by the ESRD population is currently being conducted by HCFA. Further policy implications regarding this high use group are discussion below in Section 7.3.

As expected, variations in code use and billing practices were evident among the carriers. However, only four ambulance HCPCS codes (A0010, A0020, A0220, A0221) accounted for more than three-fourths of Medicare ambulance spending. The use of local codes was concentrated in carriers serving the States of New York and California. Some of the variations in code use were indicative of ambulance-related coding

problems among the carriers that warrant further investigation by HCFA. Evidence of miscoding was particularly prevalent among the carriers serving the States of South Carolina, Washington, Oregon, and Ohio.

Despite these coding differences, the overall quality of Medicare claims data was adequate to allow an analysis of spending patterns. In the future, the general trend towards more uniform coding practices among the carriers is encouraged. This includes both the movement away from the use of local codes and the adoption of standardized code definitions. If potential abuse of a round trip is to be monitored, more carriers should be encouraged to use origin and destination modifiers.

7.2 Adequacy of Medicare Allowed Charges for Ambulance Services

The adequacy of Medicare allowed charges was assessed by: 1) comparing the costs of providing ambulance services to allowed charges in the four States of Massachusetts, Michigan, Texas, and California; and 2) comparing Medicare to Medicaid payments in these States plus the States of Georgia, Iowa, New Mexico, and New York. While the results described in this study are not necessarily representative of the United States, insights were gained that are pertinent ot establishing future Medicare policies for ambulance services.

In the comparison of costs to allowed charges, it is importance to remember

some of limitations of this study. First, the cost results were based on a sample representing only 49 percent of all sampled ambulance providers in the four States. These providers, however, were roughly similar to those in the sample with respect to ownership and urban/rural location. Also, the descriptive statistics for the sample accorded with our intuitive understanding of the nature of the ambulance industry based on the literature and anecdotal reports.

Next, the cost and allowed charges figures presented in this study are estimates, with associated standard errors. As a result, the margins between Medicare allowed charges and costs should be interpreted as approximate indicators of adequacy.

Perhaps the most serious limitation is that Medicare charge data could not be controlled for relevant provider characteristics. Thus, if the mix of providers furnishing ambulance services covered by Medicare differed substantially from sampled providers, our conclusion may have been changed. Because cost profiles varied dramatically by provider type, the conclusions derived from our comparisons by urban/rural location, where provider types were pooled, are most likely to be affected.

7.2.1 Urban/Rural Location

Based on the results of this study, Medicare allowed charges in the four States analyzed covered, on average, the average costs of providing rural ambulance

services (as payment adequacy has been defined). These results hold true for all levels of service in rural areas. Despite the apparent adequacy of average allowed charges to rural providers, a smaller proportion of rural providers than urban providers accepted assignment for Medicare claims. In the analysis of cost outliers, it was clear that in some sparsely-populated communities served by small firms, costs are significantly higher than average Medicare allowed charges. This partly stems from economics of scale in the industry. If these firms do not represent the norm in the locality, Medicare could be paying at rates that are significantly below the average cost of delivering emergency services. In addition, mileage was shown to be a major contributor to higher average costs for these rural firms. Although not examined separately in this report, an adequate per mile charge may be as important as an adequate base rate in assuring the adequacy of payment for these cost outliers.

Similarly, results for rural providers, are predicated on a mix of provider types that are primarily volunteer. As this mix changes more toward a paid staff, the average cost of emergency services to a community could increase dramatically. All-paid private ambulance services, for example, had average costs that were more than twice as high as volunteer providers. Medicare's Inflation-Indexed Charge, which constrains increases for historically-determined costs, could be too restrictive in areas where the mix of providers is changing dramatically.

On average, Medicare's allowed charges for urban providers were also adequate for BLS services. While Medicare's allowed charges for urban ALS services

were below the average cost of providing those services, it exceeded the marginal cost. The adequacy of Medicare's allowed charges, in this case, depends upon the extent that local government subsidizes urban ambulance operations.

7.2.2 Provider Type

The analysis of costs by provider type indicated that Medicare's allowed charges are higher, on average, than the average cost of ambulance services for government and volunteer ambulance providers in the four States analyzed. This is true regardless of level of service.

The same is not true for private providers. Private average costs for emergency runs (both ALS and BLS) were substantially higher than allowed charges for the average private provider. Several factors contribute to higher costs for private providers. Private providers more often operate with a paid, rather than volunteer, staff. Survey data also indicated expenses for government providers for office and garage space were substantially lower than those for other provider types, leading one to believe that government providers may indirectly be subsidized for these costs by some other government agency.

However, Medicare's allowed charges were more than, or roughly comparable to, the average cost of providing a scheduled ambulance run in these four

States for private providers. This is clearly one reason why many private providers in these States have specialized in the provision of a scheduled run service.

7.2.3 Comparison to Medicaid

The results of the survey of Medicaid programs did not provide substantial insight to the debate on payment adequacy. Most of these Medicaid programs use Medicare as a guide in determining maximum allowable charges and most attempt to pay at a lower level than Medicare. Neither of the two State programs that did pay higher rates than Medicare had developed their rates based on an analysis of costs. It is difficult to assess whether the rates based on the usual, customary, and reasonable charges were more or less "appropriate" than those allowed by Medicare.

Some of the Medicaid program's payment policies, however, warrant further consideration for the Medicare program. These policies include: 1) payment for mileage only after a minimum distance; 2) limiting the maximum number of ambulance runs in a day; 3) payment of the same mileage rate for both ALS and BLS services, especially considering the ability of ambulance firms to charge for ALS services and supplies (e.g., intubation, EKG monitoring, etc.) separately; and 4) basing reimbursement by level of service on the actual procedures performed and services rendered, rather than the type of vehicle used.

7.3 Policy Recommendations

7.3.1 Determination of Rates

In establishing rates for ambulance services, the overall objective for HCFA is to pay an amount that would ensure an adequate emergency response capability for Medicare beneficiaries. Considering the findings, presented in Section 4, that Medicare represents a small proportion of an average ambulance firms' total revenue (21 percent), setting prices that are too restrictive could jeopardize Medicare beneficiaries' access to ambulance services.

The survey results, presented in this study, showed that the provision of emergency ambulance services is a decreasing cost industry. Under these circumstances, one approach to ensure provision of services would be to set charge rates at a level that would cover long-run average costs. These rates must be sufficient to cover the costs of runs that do not result in patient transport as well as those that do.

Results from the four State survey indicate that under Medicare's current policy, allowed charges were, on average, comparable to average cost for most provider types and locations. Nevertheless, as this study suggests, there are likely to be legitimate "cost outliers" for which Medicare's allowed charges are inadequate.

The Office of the Inspector General (OIG) recommended that Medicare carriers apply inherent reasonableness criteria more stringently. These criteria allow carriers to adjust rates downward if charges do not appear to be economically justified. The use of these criteria would be particularly applicable in areas with unregulated rates served by one or a few providers.

These criteria could also be used to adjust rates upwards for areas that have legitimately higher costs. These adjustments could be made for sole community providers serving sparsely-populated areas, similar to payment adjustments made for sole community rural hospitals. (Recall there are economies of scale in the provision of ambulance services, and, ceteris paribus, the small providers will have higher costs per run.) Rates also could be adjusted if a strong case could be made that the decline in the use of volunteer staff, or changes in community standards has dramatically increased costs.

7.3.2 Scheduled Runs

A major finding of this study was that scheduled runs are provided at substantially lower cost than emergency runs. (Approximately 20 to 60 percent below the costs of providing an emergency BLS run and substantially below the cost of providing an emergency ALS run in the surveyed States.) Despite this fact, most

Medicare carriers do not distinguish between these two distinct types of services in establishing charges for ambulance services. One approach would be to encourage the use of a separate code for scheduled runs (such as A0150, already established for nonemergency runs and used frequently by carriers serving the States of Alabama, Texas, and Kansas). Savings most likely would outweigh the administrative costs (e.g., changing the coding system for some carriers, policing, etc.).

There is a question, however, of whether or not Medicare should even be covering scheduled runs as part of the federal insurance package. There are three considerations that are important when evaluating the inclusion of a benefit in an insurance package: 1) Is the event likely to lead to a catastrophic loss?; 2) Is the event predictable?; and 3) Is there the possibility of moral hazard (defined as when insurance coverage affects a persons' probability of using the benefit)? In relation to scheduled runs, several points are worthy of note. First, the charge for a scheduled run is relatively low (an estimated $110--including the deductible--based on round trip users). Second, scheduled runs, particularly when related to transport to dialysis facilities, may be predictable. Finally, the very high use rates among the ESRD population for scheduled return trip services suggest that there may be some moral hazard. All three of these factors suggest that HCFA should consider exclusion of scheduled runs from the Medicare benefit package, while still allowing for stop-loss coverage for legitimate high users.

7.3.3 Alternative Payment Approaches

Strategies to Improve Community Coordination. Based on the data presented in Section 4, a strong case can be made for community coordination of the provision of emergency medical services. First, unchecked competition among ambulance providers leads to higher, not lower, costs of services. Second, if sole service rights are granted by a community to one ambulance provider, the monopoly position of the ambulance firm coupled with a highly inelastic demand for emergency services, can lead to prices that exceed long run average costs. Rate regulation in such circumstances is highly desirable. Previous research suggests that rates are lower in communities that regulate prices for ambulance services than in those that do not.

Finally, it was demonstrated that marginal cost pricing combined with a public subsidy could also be optimal. This subsidy would be equivalent to the amount required to cover the response capability and the number of no transport runs. This response capability would be (and usually is) decided at the local community level.

As indicated in this study, private providers are at a distinct disadvantage compared to providers that receive subsidies or do not have to pay their labor force. One suggestion from the ambulance industry is to establish separate rate pools for each type of provider, or vary reimbursement by the level of subsidy. There are three

reasons why this approach should be avoided. First, type of ownership is not the main characteristic distinguishing the level of subsidy received. Some private providers do receive local subsidies. Others have developed an insurance mechanism, known as subscription services, which serves a similar purpose. Second, establishing separate rate pools can fortify the monopolistic position of ambulance firms within the rate pool and serve to fragment the market. This is the opposite of the desired effect of increasing community coordination. Finally, the administrative costs of varying rates based on provider type or the level of subsidy are likely to be prohibitive.

One option for Medicare would be to provide for emergency services through a block grant program that encourages local coordination. This option, given the variety of approaches to EMS standards and the variety of approaches to local subsidy, may be the most efficient. Under this option, Medicare could determine an amount per beneficiary that would be paid to States to ensure the provision of emergency medical services for Medicare beneficiaries. This amount may be adjusted by geographical cost differences. Initially, this could be introduced and evaluated on a demonstration-basis.

Competitive Bidding. The Office of the Inspector General suggested that Medicare may accrue substantial savings by encouraging carriers to adopt a competitive bidding model for ambulance services. This approach has been adopted by the Veteran's Administration, some hospitals, some municipalities, and selected Medicaid programs. While this approach may be viable for a community, there are many

drawbacks for Medicare. Competitive bidding can successfully reduce the price for services without jeopardizing patient access when a payer commands a large share of the market. Medicare's market share for ambulance service may be too small to make this a viable approach. A further difficulty is that in an emergency situation, response time plays an important role in patient outcome. To this extent, the nearest ambulance service provider may achieve the best outcomes. Moreover, local regulation often dictates which provider responds to an emergency, without discriminating by insurance coverage. In areas with a high proportion of Medicare eligibles, however, a competitive bidding model may be a viable option for scheduled transport.

National Fee Schedule. Finally, the viability of establishing a national fee schedule for emergency services deserves mention. In the past, HCFA has based rates on the usual, customary, and reasonable charge method. This method is inherently inflationary, allowing providers to increase next years' reimbursement by increasing this years' rates. This has been modified by the adoption, in 1985, of the Inflation-Indexed Charge. For several types of procedures and services (e.g., laboratory services and physicians' services), Medicare has moved towards the establishment of a national fee schedule.

In Section 4, the empirical finding that differences in the degree of response capability was an important factor affecting costs was discussed. This response capability and the degree of local regulation varies substantially across communities. If Medicare were to establish a national fee schedule for ambulance services, they would

clearly reward those communities with lower standards and punish those with higher standards. Since Medicare has not developed federal standards for beneficiaries, this approach is not recommended at this time.

Section 8: References

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APPENDIX A

Table A-1. Mapping of Level II HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
09999	UNKNOWN	ADD-ON	INVALID CODE	0
10000	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
10020	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
10060	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11050	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11101	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11700	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11710	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11711	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
11750	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
15240	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
15260	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
16035	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
17000	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
17001	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
17100	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
17340	UNKNOWN	ADD-ON	SURGERY, INTEG SYS	0
20615	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
20999	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
25505	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
27132	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
27236	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
27244	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
27447	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
27530	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
29405	UNKNOWN	ADD-ON	SURGERY, MUSCUL SYS	0
31500	ALS	ADD-ON	INTUBATION	1
31600	ALS	ADD-ON	INTUBATION	1
36290	UNKNOWN	ADD-ON	OTHER VAS INJ	1
36415	UNKNOWN	ADD-ON	VENIPUNCTURE	1
36489	ALS	ADD-ON	IV	1
36491	ALS	ADD-ON	IV	1
36620	ALS	ADD-ON	IV	1
40000	UNKNOWN	ADD-ON	SURGERY, MISC	0
42104	UNKNOWN	ADD-ON	SURGERY, MISC	0
43235	UNKNOWN	ADD-ON	SURGERY, MISC	0
44140	UNKNOWN	ADD-ON	SURGERY, MISC	0
45380	UNKNOWN	ADD-ON	SURGERY, MISC	0
49000	UNKNOWN	ADD-ON	SURGERY, MISC	0
52000	UNKNOWN	ADD-ON	SURGERY, MISC	0
52281	UNKNOWN	ADD-ON	SURGERY, MISC	0
53620	UNKNOWN	ADD-ON	SURGERY, MISC	0
54521	UNKNOWN	ADD-ON	SURGERY, MISC	0
58101	UNKNOWN	ADD-ON	SURGERY, MISC	0
60000	UNKNOWN	ADD-ON	SURGERY, MISC	0
64550	UNKNOWN	ADD-ON	SURGERY, MISC	0
64904	UNKNOWN	ADD-ON	SURGERY, MISC	0
69210	UNKNOWN	ADD-ON	SURGERY, MISC	0
70150	UNKNOWN	ADD-ON	RADIOLOGY	0
70160	UNKNOWN	ADD-ON	RADIOLOGY	0
70250	UNKNOWN	ADD-ON	RADIOLOGY	0
70450	UNKNOWN	ADD-ON	RADIOLOGY	0
70470	UNKNOWN	ADD-ON	RADIOLOGY	0
71010	UNKNOWN	ADD-ON	RADIOLOGY	0

Level 2 HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
71020	UNRECOGN	ADD-ON	RADIOLOGY	0
71030	UNRECOGN	ADD-ON	RADIOLOGY	0
71035	UNRECOGN	ADD-ON	RADIOLOGY	0
71101	UNRECOGN	ADD-ON	RADIOLOGY	0
71120	UNRECOGN	ADD-ON	RADIOLOGY	0
72050	UNRECOGN	ADD-ON	RADIOLOGY	0
72052	UNRECOGN	ADD-ON	RADIOLOGY	0
72080	UNRECOGN	ADD-ON	RADIOLOGY	0
72100	UNRECOGN	ADD-ON	RADIOLOGY	0
72110	UNRECOGN	ADD-ON	RADIOLOGY	0
72131	UNRECOGN	ADD-ON	RADIOLOGY	0
72170	UNRECOGN	ADD-ON	RADIOLOGY	0
72190	UNRECOGN	ADD-ON	RADIOLOGY	0
73030	UNRECOGN	ADD-ON	RADIOLOGY	0
73050	UNRECOGN	ADD-ON	RADIOLOGY	0
73060	UNRECOGN	ADD-ON	RADIOLOGY	0
73070	UNRECOGN	ADD-ON	RADIOLOGY	0
73100	UNRECOGN	ADD-ON	RADIOLOGY	0
73110	UNRECOGN	ADD-ON	RADIOLOGY	0
73130	UNRECOGN	ADD-ON	RADIOLOGY	0
73140	UNRECOGN	ADD-ON	RADIOLOGY	0
73500	UNRECOGN	ADD-ON	RADIOLOGY	0
73510	UNRECOGN	ADD-ON	RADIOLOGY	0
73520	UNRECOGN	ADD-ON	RADIOLOGY	0
73550	UNRECOGN	ADD-ON	RADIOLOGY	0
73560	UNRECOGN	ADD-ON	RADIOLOGY	0
73562	UNRECOGN	ADD-ON	RADIOLOGY	0
73564	UNRECOGN	ADD-ON	RADIOLOGY	0
73590	UNRECOGN	ADD-ON	RADIOLOGY	0
73620	UNRECOGN	ADD-ON	RADIOLOGY	0
73630	UNRECOGN	ADD-ON	RADIOLOGY	0
73650	UNRECOGN	ADD-ON	RADIOLOGY	0
73660	UNRECOGN	ADD-ON	RADIOLOGY	0
74000	UNRECOGN	ADD-ON	RADIOLOGY	0
74010	UNRECOGN	ADD-ON	RADIOLOGY	0
74020	UNRECOGN	ADD-ON	RADIOLOGY	0
74150	UNRECOGN	ADD-ON	RADIOLOGY	0
74160	UNRECOGN	ADD-ON	RADIOLOGY	0
74220	UNRECOGN	ADD-ON	RADIOLOGY	0
74240	UNRECOGN	ADD-ON	RADIOLOGY	0
74245	UNRECOGN	ADD-ON	RADIOLOGY	0
74246	UNRECOGN	ADD-ON	RADIOLOGY	0
74247	UNRECOGN	ADD-ON	RADIOLOGY	0
74270	UNRECOGN	ADD-ON	RADIOLOGY	0
74280	UNRECOGN	ADD-ON	RADIOLOGY	0
74290	UNRECOGN	ADD-ON	RADIOLOGY	0
74300	UNRECOGN	ADD-ON	RADIOLOGY	0
74305	UNRECOGN	ADD-ON	RADIOLOGY	0
74400	UNRECOGN	ADD-ON	RADIOLOGY	0
74410	UNRECOGN	ADD-ON	RADIOLOGY	0
74420	UNRECOGN	ADD-ON	RADIOLOGY	0
74430	UNRECOGN	ADD-ON	RADIOLOGY	0
75692	UNRECOGN	ADD-ON	RADIOLOGY	0
75757	UNRECOGN	ADD-ON	RADIOLOGY	0

Level 2 HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
76090	UNKNOWN	ADD-ON	RADIOLOGY	0
76091	UNKNOWN	ADD-ON	RADIOLOGY	0
76100	UNKNOWN	ADD-ON	RADIOLOGY	0
76140	UNKNOWN	ADD-ON	RADIOLOGY	0
76150	UNKNOWN	ADD-ON	RADIOLOGY	0
76499	UNKNOWN	ADD-ON	RADIOLOGY	0
76516	UNKNOWN	ADD-ON	RADIOLOGY	0
76705	UNKNOWN	ADD-ON	RADIOLOGY	0
76770	UNKNOWN	ADD-ON	RADIOLOGY	0
76775	UNKNOWN	ADD-ON	RADIOLOGY	0
76856	UNKNOWN	ADD-ON	RADIOLOGY	0
77405	UNKNOWN	ADD-ON	RADIOLOGY	0
77777	UNKNOWN	ADD-ON	RADIOLOGY	0
78201	UNKNOWN	ADD-ON	RADIOLOGY	0
78306	UNKNOWN	ADD-ON	RADIOLOGY	0
78461	UNKNOWN	ADD-ON	RADIOLOGY	0
80004	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
80012	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
80019	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
80070	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
80500	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
81000	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
81002	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82225	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82270	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82465	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82540	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82565	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82663	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82947	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
82948	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
83036	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
83718	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
84132	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
84295	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
84478	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
84520	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85007	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85014	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85018	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85021	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85022	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85031	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85048	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85100	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
85999	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
86999	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
87060	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
87086	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88150	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88160	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88199	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88300	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88302	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
88304	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88305	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88307	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
88309	UNKNOWN	ADD-ON	PATHOLOGY,LAB	0
90600	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90810	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90815	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90817	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90820	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90830	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90840	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90850	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90860	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90870	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90880	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90115	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90140	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90150	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90160	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90170	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90200	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90215	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90220	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90240	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90250	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90260	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90270	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90280	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90292	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90300	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90320	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90340	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90350	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90360	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90370	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90400	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90430	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90440	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90450	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90460	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90470	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90480	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90505	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90510	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90515	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90517	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90540	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90550	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90560	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90570	UNKNOWN	ADD-ON	PHYSICIAN VISIT	0
90600	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
90605	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
90610	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
90620	UNKNOWN	ADD-ON	MEDICAL CONSULT	0

Level 2 HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
99638	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
99641	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
99642	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
99643	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
99650	UNKNOWN	ADD-ON	MEDICAL CONSULT	0
99699	UNKNOWN	ADD-ON	IMMUNIZATIONS	0
90782	UNKNOWN	ADD-ON	IMMUNIZATIONS	0
90732	UNKNOWN	ADD-ON	IMMUNIZATIONS	0
90782	UNKNOWN	ADD-ON	THERAPEUTIC INJ	1
90784	UNKNOWN	ADD-ON	THERAPEUTIC INJ	1
90799	UNKNOWN	ADD-ON	THERAPEUTIC INJ	1
90841	UNKNOWN	ADD-ON	PSYCHIATRIC PROC	0
90843	UNKNOWN	ADD-ON	PSYCHIATRIC PROC	0
90844	UNKNOWN	ADD-ON	PSYCHIATRIC PROC	0
90853	UNKNOWN	ADD-ON	PSYCHIATRIC PROC	0
90966	UNKNOWN	ADD-ON	DIALYSIS	0
91020	UNKNOWN	ADD-ON	GASTROENTEROLOGY	0
92002	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92004	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92012	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92014	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92081	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92082	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92083	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92100	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92225	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92250	UNKNOWN	ADD-ON		0
92353	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92395	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92396	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92499	UNKNOWN	ADD-ON	OPHTHALMOLOGY	0
92553	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92557	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92566	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92567	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92568	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92569	UNKNOWN	ADD-ON	AUDIOLOGIC TESTS	0
92950	UNKNOWN	ADD-ON	CPR	1
92960	ALS	ADD-ON	DEFIBRILLATION	1
93000	ALS	ADD-ON	EKG	1
93005	ALS	ADD-ON	EKG	1
93010	ALS	ADD-ON	EKG	1
93014	ALS	ADD-ON	EKG	1
93015	ALS	ADD-ON	EKG	1
93040	ALS	ADD-ON	EKG	1
93041	ALS	ADD-ON	EKG	1
93042	ALS	ADD-ON	EKG	1
93262	ALS	ADD-ON	EKG	1
93265	ALS	ADD-ON	EKG	1
93266	ALS	ADD-ON	EKG	1
93300	UNKNOWN	ADD-ON	ECG	0
93305	UNKNOWN	ADD-ON	ECG	0
93307	UNKNOWN	ADD-ON	ECG	0
93309	UNKNOWN	ADD-ON	ECG	0

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
93320	UNKNOWN	ADD-ON	ECG	0
93503	UNKNOWN	ADD-ON	MISC PHYS SERV	0
93850	UNKNOWN	ADD-ON	MISC PHYS SERV	0
93870	UNKNOWN	ADD-ON	MISC PHYS SERV	0
93960	UNKNOWN	ADD-ON	MISC PHYS SERV	0
94010	UNKNOWN	ADD-ON	MISC PHYS SERV	0
94060	UNKNOWN	ADD-ON	MISC PHYS SERV	0
94160	UNKNOWN	ADD-ON	MISC PHYS SERV	0
94657	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95120	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95125	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95155	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95199	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95819	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95822	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95827	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95857	UNKNOWN	ADD-ON	MISC PHYS SERV	0
95955	UNKNOWN	ADD-ON	MISC PHYS SERV	0
96500	UNKNOWN	ADD-ON	MISC PHYS SERV	0
96501	UNKNOWN	ADD-ON	MISC PHYS SERV	0
96540	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97010	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97014	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97018	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97024	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97039	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97110	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97120	UNKNOWN	ADD-ON	MISC PHYS SERV	0
97139	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99000	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99002	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99052	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99054	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99062	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99064	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99065	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99070	UNKNOWN	ADD-ON	PHYSICIAN SUPPLIES	0
99082	UNKNOWN	ADD-ON	UNUSUAL PAT TRANS	1
99155	UNKNOWN	ADD-ON	CRITICAL CARE	0
99160	UNKNOWN	ADD-ON	CRITICAL CARE	0
99162	UNKNOWN	ADD-ON	CRITICAL CARE	0
99170	UNKNOWN	ADD-ON	CRITICAL CARE	0
99171	UNKNOWN	ADD-ON	CRITICAL CARE	0
99172	UNKNOWN	ADD-ON	CRITICAL CARE	0
99173	UNKNOWN	ADD-ON	CRITICAL CARE	0
99174	UNKNOWN	ADD-ON	CRITICAL CARE	0
99175	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99195	UNKNOWN	ADD-ON	MISC PHYS SERV	0
99199	UNKNOWN	ADD-ON	MISC PHYS SERV	0
A0010	BLS	BASE	AMBULANCE SERVICE, BASE RATE, BLS, ONE WAY	1
A0020	BLS	ADD-ON	AMBULANCE SERVICE, BLS,PER MILE, ONE WAY	1
A0021	UNKNOWN	ADD-ON	AMBULANCE SERVICE, OUTSIDE STATE, PER MILE, MEDICAID ONLY	1
A0030	AIR	BASE	AMBULANCE SERVICE, AIR, ONE WAY	1
A0040	AIR	BASE	AMBULANCE SERVICE, HELICOPTER	1

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
A0050	UNKNOWN	ADD-ON	AMBULANCE SERVICE, EMERGENCY, WAIER, SPECIAL TRANSPORT	1
A0060	UNKNOWN	ADD-ON	AMBULANCE SERVICE, WAITING TIME	1
A0070	UNKNOWN	ADD-ON	AMBULANCE SERVICE, CHYGEN	1
A0080	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, PER MILE - VOLUNTEER, NO VESTED INTEREST	1
A0090	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, PER MILE, VOLUNTEER, INTERESTED INDIVIDUAL	1
A0100	UNKNOWN	BASE	NON-EMERGENCY TRANSPORT, TAXI, INTRA CITY	1
A0110	UNKNOWN	BASE	NON-EMERGENCY TRANSPORT, BUS, INTRA OR INTER STATE CARRIER	1
A0120	UNKNOWN	BASE	NON-EMERGENCY TRANSPORT, MINI BUS, OTHER	1
A0130	UNKNOWN	BASE	NON-EMERGENCY TRANSPORT, WHEEL-CHAIR, VAN	1
A0140	AIR	BASE	NON-EMERGENCY TRANSPORT, AIR, PRIVATE OR COMMERCIAL INTRA OR INTER STATE	1
A0150	BLS	BASE	NON-EMERGENCY TRANSPORT, AMBULANCE, BASE RATE, ONE WAY	1
A0160	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, ANCILLARY: PARKING FEES, ETC.	1
A0170	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, ANCILLARY: LODGING-RECIPIENT	1
A0180	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, ANCILLARY: MEALS-RECIPIENT	1
A0200	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, ANCILLARY: LODGING-ESCORT	1
A0210	UNKNOWN	ADD-ON	NON-EMERGENCY TRANSPORT, ANCILLARY: MEALS-ESCORT	1
A0215	UNKNOWN	ADD-ON	AMBULANCE SERVICE, MISCELLANEOUS DISPOSABLE SUPPLIES	1
A0220	ALS	BASE	AMBULANCE SERVICE, ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	1
A0221	ALS	BASE	AMBULANCE SERVICE, ALS, PER MILE, ONE WAY	1
A0222	BLS	BASE	AMBULANCE SERVICE, RETURN TRIP	1
A0223	ALS	BASE	AMBULANCE SERVICE, ALS, BASE RATE, NONINCLUSIVE	1
A0225	UNKNOWN	BASE	AMBULANCE SERVICE, NEONATAL TRANSPORT, ONE WAY	1
A0999	UNKNOWN	UNKNOWN	UNLISTED AMBULANCE SERVICE	1
A2000	UNKNOWN	ADD-ON	CHIROPRACTY	0
A4200	UNKNOWN	ADD-ON	SUPPLIES	1
A4202	UNKNOWN	ADD-ON	SUPPLIES	1
A4206	UNKNOWN	ADD-ON	SUPPLIES	1
A4208	UNKNOWN	ADD-ON	SUPPLIES	1
A4209	UNKNOWN	ADD-ON	SUPPLIES	1
A4213	UNKNOWN	ADD-ON	SUPPLIES	1
A4214	UNKNOWN	ADD-ON	SUPPLIES	1
A4215	UNKNOWN	ADD-ON	SUPPLIES	1
A4244	UNKNOWN	ADD-ON	SUPPLIES	1
A4246	UNKNOWN	ADD-ON	SUPPLIES	1
A4247	UNKNOWN	ADD-ON	SUPPLIES	1
A4252	UNKNOWN	ADD-ON	SUPPLIES	1
A4253	UNKNOWN	ADD-ON	SUPPLIES	1
A4255	UNKNOWN	ADD-ON	SUPPLIES	1
A4259	UNKNOWN	ADD-ON	SUPPLIES	1
A4341	UNKNOWN	ADD-ON	SUPPLIES	1
A4342	UNKNOWN	ADD-ON	SUPPLIES	1
A4343	UNKNOWN	ADD-ON	SUPPLIES	1
A4344	UNKNOWN	ADD-ON	SUPPLIES	1
A4347	UNKNOWN	ADD-ON	SUPPLIES	1
A4348	UNKNOWN	ADD-ON	SUPPLIES	1
A4349	UNKNOWN	ADD-ON	SUPPLIES	1
A4354	UNKNOWN	ADD-ON	SUPPLIES	1
A4355	UNKNOWN	ADD-ON	SUPPLIES	1
A4356	UNKNOWN	ADD-ON	SUPPLIES	1
A4357	UNKNOWN	ADD-ON	SUPPLIES	1
A4358	UNKNOWN	ADD-ON	SUPPLIES	1
A4360	UNKNOWN	ADD-ON	SUPPLIES	1
A4361	UNKNOWN	ADD-ON	SUPPLIES	1
A4362	UNKNOWN	ADD-ON	SUPPLIES	1

Level 2 HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
A4363	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4364	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4365	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4366	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4367	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4369	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4402	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4404	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4421	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4440	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4450	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4453	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4460	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4550	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4554	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4555	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4556	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4557	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4558	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4560	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4565	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4570	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4590	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4610	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4649	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4655	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4700	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4712	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4750	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4770	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4772	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4790	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4800	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4910	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4913	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4916	LXXXXXXXX	ADD-ON	SUPPLIES	1
A4927	LXXXXXXXX	ADD-ON	SUPPLIES	1
A9150	LXXXXXXXX	ADD-ON	SUPPLIES	1
A9270	LXXXXXXXX	ADD-ON	SUPPLIES	1
E0100	LXXXXXXXX	ADD-ON	DME	0
E0105	LXXXXXXXX	ADD-ON	DME	0
E0110	LXXXXXXXX	ADD-ON	DME	0
E0112	LXXXXXXXX	ADD-ON	DME	0
E0114	LXXXXXXXX	ADD-ON	DME	0
E0130	LXXXXXXXX	ADD-ON	DME	0
E0135	LXXXXXXXX	ADD-ON	DME	0
E0141	LXXXXXXXX	ADD-ON	DME	0
E0143	LXXXXXXXX	ADD-ON	DME	0
E0146	LXXXXXXXX	ADD-ON	DME	0
E0155	LXXXXXXXX	ADD-ON	DME	0
E0160	LXXXXXXXX	ADD-ON	DME	0
E0163	LXXXXXXXX	ADD-ON	DME	0
E0164	LXXXXXXXX	ADD-ON	DME	0
E0165	LXXXXXXXX	ADD-ON	DME	0

Level 2 HCPCS Codes

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	ANNUAL ABCE (1-YES 0-NO)
E0166	UNKNOWN	ADD-ON	DME	0
E0167	UNKNOWN	ADD-ON	DME	0
E0180	UNKNOWN	ADD-ON	DME	0
E0181	UNKNOWN	ADD-ON	DME	0
E0182	UNKNOWN	ADD-ON	DME	0
E0185	UNKNOWN	ADD-ON	DME	0
E0186	UNKNOWN	ADD-ON	DME	0
E0185	UNKNOWN	ADD-ON	DME	0
E0189	UNKNOWN	ADD-ON	DME	0
E0192	UNKNOWN	ADD-ON	DME	0
E0195	UNKNOWN	ADD-ON	DME	0
E0215	UNKNOWN	ADD-ON	DME	0
E0235	UNKNOWN	ADD-ON	DME	0
E0250	UNKNOWN	ADD-ON	DME	0
E0252	UNKNOWN	ADD-ON	DME	0
E0255	UNKNOWN	ADD-ON	DME	0
E0260	UNKNOWN	ADD-ON	DME	0
E0265	UNKNOWN	ADD-ON	DME	0
E0266	UNKNOWN	ADD-ON	DME	0
E0271	UNKNOWN	ADD-ON	DME	0
E0305	UNKNOWN	ADD-ON	DME	0
E0310	UNKNOWN	ADD-ON	DME	0
E0325	UNKNOWN	ADD-ON	DME	0
E0326	UNKNOWN	ADD-ON	DME	0
E0400	UNKNOWN	ADD-ON	ONTGEN	1
E0405	UNKNOWN	ADD-ON	ONTGEN	1
E0410	UNKNOWN	ADD-ON	ONTGEN	1
E0416	UNKNOWN	ADD-ON	ONTGEN	1
E0420	UNKNOWN	ADD-ON	ONTGEN	1
E0425	UNKNOWN	ADD-ON	ONTGEN	1
E0430	UNKNOWN	ADD-ON	ONTGEN	1
E0435	UNKNOWN	ADD-ON	ONTGEN	1
E0480	UNKNOWN	ADD-ON	DME	0
E0505	UNKNOWN	ADD-ON	DME	0
E0515	UNKNOWN	ADD-ON	DME	0
E0550	UNKNOWN	ADD-ON	DME	0
E0555	UNKNOWN	ADD-ON	DME	0
E0565	UNKNOWN	ADD-ON	DME	0
E0570	UNKNOWN	ADD-ON	DME	0
E0585	UNKNOWN	ADD-ON	DME	0
E0600	UNKNOWN	ADD-ON	DME	0
E0605	UNKNOWN	ADD-ON	DME	0
E0607	UNKNOWN	ADD-ON	DME	0
E0620	UNKNOWN	ADD-ON	DME	0
E0621	UNKNOWN	ADD-ON	DME	0
E0630	UNKNOWN	ADD-ON	DME	0
E0730	UNKNOWN	ADD-ON	DME	0
E0740	UNKNOWN	ADD-ON	DME	0
E0776	UNKNOWN	ADD-ON	DME	0
E0860	UNKNOWN	ADD-ON	DME	0
E0910	UNKNOWN	ADD-ON	DME	0
E0940	UNKNOWN	ADD-ON	DME	0
E0942	UNKNOWN	ADD-ON	DME	0
E0945	UNKNOWN	ADD-ON	DME	0

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
E0951	UNKNOWN	ADD-ON	ONE	0
E0953	UNKNOWN	ADD-ON	ONE	0
E0956	UNKNOWN	ADD-ON	ONE	0
E0961	UNKNOWN	ADD-ON	ONE	0
E0962	UNKNOWN	ADD-ON	ONE	0
E0963	UNKNOWN	ADD-ON	ONE	0
E0972	UNKNOWN	ADD-ON	ONE	0
E0973	UNKNOWN	ADD-ON	ONE	0
E0975	UNKNOWN	ADD-ON	ONE	0
E0976	UNKNOWN	ADD-ON	ONE	0
E0979	UNKNOWN	ADD-ON	ONE	0
E0991	UNKNOWN	ADD-ON	ONE	0
E0993	UNKNOWN	ADD-ON	ONE	0
E0994	UNKNOWN	ADD-ON	ONE	0
E0996	UNKNOWN	ADD-ON	ONE	0
E0999	UNKNOWN	ADD-ON	ONE	0
E1000	UNKNOWN	ADD-ON	ONE	0
E1005	UNKNOWN	ADD-ON	ONE	0
E1010	UNKNOWN	ADD-ON	ONE	0
E1035	UNKNOWN	ADD-ON	ONE	0
E1036	UNKNOWN	ADD-ON	ONE	0
E1050	UNKNOWN	ADD-ON	ONE	0
E1060	UNKNOWN	ADD-ON	ONE	0
E1068	UNKNOWN	ADD-ON	ONE	0
E1069	UNKNOWN	ADD-ON	ONE	0
E1083	UNKNOWN	ADD-ON	ONE	0
E1086	UNKNOWN	ADD-ON	ONE	0
E1087	UNKNOWN	ADD-ON	ONE	0
E1093	UNKNOWN	ADD-ON	ONE	0
E1110	UNKNOWN	ADD-ON	ONE	0
E1130	UNKNOWN	ADD-ON	ONE	0
E1140	UNKNOWN	ADD-ON	ONE	0
E1150	UNKNOWN	ADD-ON	ONE	0
E1160	UNKNOWN	ADD-ON	ONE	0
E1180	UNKNOWN	ADD-ON	ONE	0
E1213	UNKNOWN	ADD-ON	ONE	0
E1222	UNKNOWN	ADD-ON	ONE	0
E1223	UNKNOWN	ADD-ON	ONE	0
E1230	UNKNOWN	ADD-ON	ONE	0
E1240	UNKNOWN	ADD-ON	ONE	0
E1250	UNKNOWN	ADD-On	ONE	0
E1260	UNKNOWN	ADD-ON	ONE	0
E1270	UNKNOWN	ADD-ON	ONE	0
E1280	UNKNOWN	ADD-ON	ONE	0
E1285	UNKNOWN	ADD-ON	ONE	0
E1290	UNKNOWN	ADD-ON	ONE	0
E1350	UNKNOWN	ADD-ON	ONE	0
E1351	UNKNOWN	ADD-ON	ONE	0
E1352	UNKNOWN	ADD-ON	ONE	0
E1353	UNKNOWN	ADD-ON	ONE	0
E1354	UNKNOWN	ADD-ON	ONE	0
E1355	UNKNOWN	ADD-ON	ONE	0
E1360	UNKNOWN	ADD-ON	ONE	0
E1371	UNKNOWN	ADD-ON	ONE	0

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION		AMBULANCE (1-YES 0-NO)
E1373	UNKNOWN	ADD-ON	DME		0
E1374	UNKNOWN	ADD-ON	DME		0
E1377	UNKNOWN	ADD-ON	DME		0
E1378	UNKNOWN	ADD-ON	DME		0
E1385	UNKNOWN	ADD-ON	DME		0
E1388	UNKNOWN	ADD-ON	DME		0
E1389	UNKNOWN	ADD-ON	DME		0
E1390	UNKNOWN	ADD-ON	DME		0
E1391	UNKNOWN	ADD-ON	DME		0
E1392	UNKNOWN	ADD-ON	DME		0
E1393	UNKNOWN	ADD-ON	DME		0
E1394	UNKNOWN	ADD-ON	DME		0
E1395	UNKNOWN	ADD-ON	DME		0
E1396	UNKNOWN	ADD-ON	DME		0
E1399	UNKNOWN	ADD-ON	DME		0
H5230	UNKNOWN	ADD-ON	REHAB SERVICES		0
H5240	UNKNOWN	ADD-ON	REHAB SERVICES		0
J0110	UNKNOWN	ADD-ON	DRUGS		1
J0120	UNKNOWN	ADD-ON	DRUGS		1
J0140	UNKNOWN	ADD-ON	DRUGS		1
J0170	UNKNOWN	ADD-ON	DRUGS		1
J0240	UNKNOWN	ADD-ON	DRUGS		1
J0280	UNKNOWN	ADD-ON	DRUGS		1
J0460	UNKNOWN	ADD-ON	DRUGS		1
J0490	UNKNOWN	ADD-ON	DRUGS		1
J0780	UNKNOWN	ADD-ON	DRUGS		1
J0890	UNKNOWN	ADD-ON	DRUGS		1
J0895	UNKNOWN	ADD-ON	DRUGS		1
J1030	UNKNOWN	ADD-ON	DRUGS		1
J1040	UNKNOWN	ADD-ON	DRUGS		1
J1060	UNKNOWN	ADD-ON	DRUGS		1
J1070	UNKNOWN	ADD-ON	DRUGS		1
J1100	UNKNOWN	ADD-ON	DRUGS		1
J1480	UNKNOWN	ADD-ON	DRUGS		1
J1640	UNKNOWN	ADD-ON	DRUGS		1
J1760	UNKNOWN	ADD-ON	DRUGS		1
J1880	UNKNOWN	ADD-ON	DRUGS		1
J1910	UNKNOWN	ADD-ON	DRUGS		1
J1940	UNKNOWN	ADD-ON	DRUGS		1
J2000	UNKNOWN	ADD-ON	DRUGS		1
J2010	UNKNOWN	ADD-ON	DRUGS		1
J2175	UNKNOWN	ADD-ON	DRUGS		1
J2270	UNKNOWN	ADD-ON	DRUGS		1
J2370	UNKNOWN	ADD-ON	DRUGS		1
J2550	UNKNOWN	ADD-ON	DRUGS		1
J2610	UNKNOWN	ADD-ON	DRUGS		1
J2680	UNKNOWN	ADD-ON	DRUGS		1
J2910	UNKNOWN	ADD-ON	DRUGS		1
J2912	UNKNOWN	ADD-ON	DRUGS		1
J3105	UNKNOWN	ADD-ON	DRUGS		1
J3190	UNKNOWN	ADD-ON	DRUGS		1
J3360	UNKNOWN	ADD-ON	DRUGS		1
J3410	UNKNOWN	ADD-ON	DRUGS		1
J3420	UNKNOWN	ADD-ON	DRUGS		1

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
J3480	UNKNOWN	ADD-ON	DRUGS	1
J3490	UNKNOWN	ADD-ON	DRUGS	1
J7020	UNKNOWN	ADD-ON	DRUGS	1
J7030	UNKNOWN	ADD-ON	DRUGS	1
J7040	UNKNOWN	ADD-ON	DRUGS	1
J7042	UNKNOWN	ADD-ON	DRUGS	1
J7050	UNKNOWN	ADD-ON	DRUGS	1
J7060	UNKNOWN	ADD-ON	DRUGS	1
J7070	UNKNOWN	ADD-ON	DRUGS	1
J7100	UNKNOWN	ADD-ON	DRUGS	1
J7110	UNKNOWN	ADD-ON	DRUGS	1
J7120	UNKNOWN	ADD-ON	DRUGS	1
J8999	UNKNOWN	ADD-ON	DRUGS	1
J9190	UNKNOWN	ADD-ON	DRUGS	1
J9360	UNKNOWN	ADD-ON	DRUGS	1
J9999	UNKNOWN	ADD-ON	DRUGS	1
L0100	UNKNOWN	ADD-ON	ORTHOTICS	0
L0120	UNKNOWN	ADD-ON	ORTHOTICS	0
L0140	UNKNOWN	ADD-ON	ORTHOTICS	0
L0150	UNKNOWN	ADD-ON	ORTHOTICS	0
L0160	UNKNOWN	ADD-ON	ORTHOTICS	0
L0170	UNKNOWN	ADD-ON	ORTHOTICS	0
L0180	UNKNOWN	ADD-ON	ORTHOTICS	0
L0210	UNKNOWN	ADD-ON	ORTHOTICS	0
L0500	UNKNOWN	ADD-ON	ORTHOTICS	0
L0510	UNKNOWN	ADD-ON	ORTHOTICS	0
L0900	UNKNOWN	ADD-ON	ORTHOTICS	0
L0920	UNKNOWN	ADD-ON	ORTHOTICS	0
L0970	UNKNOWN	ADD-ON	ORTHOTICS	0
L1040	UNKNOWN	ADD-ON	ORTHOTICS	0
L1060	UNKNOWN	ADD-ON	ORTHOTICS	0
L1499	UNKNOWN	ADD-ON	ORTHOTICS	0
L1800	UNKNOWN	ADD-ON	ORTHOTICS	0
L1830	UNKNOWN	ADD-ON	ORTHOTICS	0
L1900	UNKNOWN	ADD-ON	ORTHOTICS	0
L4210	UNKNOWN	ADD-ON	ORTHOTICS	0
L5050	UNKNOWN	ADD-ON	PROSTHETICS	0
L5300	UNKNOWN	ADD-ON	PROSTHETICS	0
L5530	UNKNOWN	ADD-ON	PROSTHETICS	0
L5636	UNKNOWN	ADD-ON	PROSTHETICS	0
L5999	UNKNOWN	ADD-ON	PROSTHETICS	0
L7500	UNKNOWN	ADD-ON	PROSTHETICS	0
L8000	UNKNOWN	ADD-ON	PROSTHETICS	0
L8020	UNKNOWN	ADD-ON	PROSTHETICS	0
L8300	UNKNOWN	ADD-ON	PROSTHETICS	0
L8420	UNKNOWN	ADD-ON	PROSTHETICS	0
L8499	UNKNOWN	ADD-ON	PROSTHETICS	0
L9999	UNKNOWN	ADD-ON	PROSTHETICS	0
R0590	ALS	ADD-ON	EKG	1
P9600	UNKNOWN	ADD-ON	TRAN LAB SPECIMEN	1
P9603	UNKNOWN	ADD-ON	TRAN LAB SPECIMEN	1
R0070	UNKNOWN	ADD-ON	TRAN OF XRAY EQUIP	1
R0075	UNKNOWN	ADD-ON	TRAN OF XRAY EQUIP	1
R0076	UNKNOWN	ADD-ON	TRANSPORT OF EKG	1

HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES 0-NO)
T1060	UNKNOWN	ADD-ON	INVALID CODE	0
V2020	UNKNOWN	ADD-ON	VISION SERVICES	0
V2100	UNKNOWN	ADD-ON	VISION SERVICES	0
V2103	UNKNOWN	ADD-ON	VISION SERVICES	0
V2104	UNKNOWN	ADD-ON	VISION SERVICES	0
V2117	UNKNOWN	ADD-ON	VISION SERVICES	0
V2200	UNKNOWN	ADD-ON	VISION SERVICES	0
V2203	UNKNOWN	ADD-ON	VISION SERVICES	0
V2204	UNKNOWN	ADD-ON	VISION SERVICES	0
V2217	UNKNOWN	ADD-ON	VISION SERVICES	0
V2303	UNKNOWN	ADD-ON	VISION SERVICES	0
V2744	UNKNOWN	ADD-ON	VISION SERVICES	0
V2755	UNKNOWN	ADD-ON	VISION SERVICES	0
V2788	UNKNOWN	ADD-ON	VISION SERVICES	0
V2799	UNKNOWN	ADD-ON	VISION SERVICES	0

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
00700	Y9212	UNKNOWN	UNKNOWN		0
00700	Y9213	UNKNOWN	UNKNOWN		0
00700	Y9214	UNKNOWN	UNKNOWN		0
00700	Y9215	UNKNOWN	UNKNOWN		0
00801	W0040	UNKNOWN	ADD-ON	Brief exam	0
00801	W1999	UNKNOWN	ADD-ON	No description	0
00801	W3000	UNKNOWN	ADD-ON	Treatment of onychia and/or paronychia	0
00801	W3055	UNKNOWN	ADD-ON	Cutting or removal of corns applic. of skin creams	0
00801	Z2051	UNKNOWN	ADD-ON	Chemotrips (50)	0
00803	W0540	BLS	BASE	Ambulance service, base rate evenings, weekends, a	1
00803	W0550	BLS	BASE	Evenings, weekends, and holidays, loaded return tr	1
00803	W0560	BLS	BASE	Evenings, weekends, and holidays, loaded, one way	1
00803	W0570	BLS	BASE	Evenings, weekends, and holidays, loaded one way (	1
00803	W0590	ALS	BASE	Ambulance service-base rate ALS, emergency one way	1
00803	W0600	BLS	BASE	One way for all service originating outside NYC	1
00803	W0610	BLS	BASE	Evenings, weekends, and holidays (for all service	1
00803	W0620	ALS	ADD-ON	Additional attendant	1
00803	W0625	ALS	ADD-ON	EKG tracing in a BLS ambulance	1
00803	W0630	BLS	BASE	Ambulance service, base rate (BLS), loaded return	1
00803	W0640	ALS	BASE	One way (for all service originating within the fi	1
00803	W0804	UNKNOWN	ADD-ON	Disposable electrodes	1
00803	W0974	UNKNOWN	ADD-ON	Skin barrier water, oz.	1
00803	W1001	UNKNOWN	ADD-ON	Labor charge DME repair (one hour)	0
00803	W1003	UNKNOWN	ADD-ON	Labor charge DME repair (two hours)	0
00803	W2015	UNKNOWN	ADD-ON	Upholstered side cushion	0
00803	W2900	ALS	ADD-ON		1
00803	W9178	UNKNOWN	ADD-ON	Suction catheter (oz.)	1
00803	W9900	UNKNOWN	ADD-ON	No description	0
00820	W2012	ALS	ADD-ON	ALS ambulance EKG monitor	1
00820	W2013	ALS	ADD-ON	EKG supplies	1
00820	W2014	ALS	ADD-ON	Intubation supplies	1
00820	W2015	ALS	ADD-ON	Suction supplies	1
00820	W2016	UNKNOWN	ADD-ON	Night call	1
00820	W2017	ALS	ADD-ON	Defibrillation supplies	1
00820	W2018	ALS	ADD-ON	IV supplies	1
00865	W0040	UNKNOWN	ADD-ON	Brief exam	0
00865	W5425	ALS	ADD-ON	Vitamin B	1
00865	W9041	UNKNOWN	ADD-ON	Nursing home visit	0
00865	Y0034	UNKNOWN	ADD-ON	Vision	0
00865	Y0000	UNKNOWN	ADD-ON	Vision	0
00865	Z0020	UNKNOWN	ADD-ON	Hospital bed	0
00865	Z0065	ALS	BASE		1
00865	Z0224	ALS	ADD-ON		1
00865	Z0445	UNKNOWN	ADD-ON	Oxygen concentrator	1
00865	Z0464	UNKNOWN	ADD-ON	Nasal cannula	1
00865	Z0466	ALS	ADD-ON	Oxygen mask	1
00865	Z4405	UNKNOWN	ADD-ON	Ostomy wafers (4x4)	1
00865	Z4407	UNKNOWN	ADD-ON	Skin prep wipes	1
00865	Z4443	UNKNOWN	ADD-ON	Tracheostomy suction catheter	1
00865	Z4772	UNKNOWN	ADD-ON	Dentrostick	1
00865	Z8025	UNKNOWN	ADD-ON	Breast prosthesis	0
00880	W0900	ALS	ADD-ON	ALS services	1
00880	W0901	ALS	ADD-ON	Airway supplies	1
00880	W0903	ALS	ADD-ON	EKG supplies	1

Level 3 Local Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
00645	Z3015	UNKNOWN	ADD-ON	No description	0
00650	T0100	ALS	ADD-ON	EKG monitoring supplies	1
00650	T0110	ALS	ADD-ON	IV set-up and supplies	1
00650	T0120	ALS	ADD-ON	Pharmaceuticals and supplies	1
00660	Z0001	UNKNOWN	UNKNOWN	No description	0
00660	Z0021	UNKNOWN	UNKNOWN	No description	0
00660	Z0022	UNKNOWN	UNKNOWN	No description	0
00660	Z0023	UNKNOWN	UNKNOWN	No description	0
00660	Z0024	UNKNOWN	UNKNOWN	No description	0
00660	Z0025	UNKNOWN	UNKNOWN	No description	0
00660	Z0026	UNKNOWN	UNKNOWN	No description	0
00660	Z0027	UNKNOWN	UNKNOWN	No description	0
00660	Z0028	UNKNOWN	UNKNOWN	No description	0
00660	Z0071	UNKNOWN	ADD-ON	Emergency rate	1
00660	Z0072	UNKNOWN	ADD-ON	Night call	1
00660	Z6157	UNKNOWN	ADD-ON	Respiratory support system, oxygen concentrator in	1
00690	W0001	UNKNOWN	ADD-ON	Bennett AP-5	0
00690	W0015	UNKNOWN	ADD-ON	PCU liquid oxygen	1
00690	W0121	UNKNOWN	ADD-ON	Weekend and holiday differential	1
00690	W0122	UNKNOWN	ADD-ON	Night differential	1
00690	W0153	UNKNOWN	ADD-ON	Extra attendant	1
00690	W0154	ALS	ADD-ON	EKG monitoring	1
00700	T9211	ALS	ADD-ON	Ambulance service-esophageal obturator airway, ALS	1
00700	T9212	ALS	ADD-ON	Ambulance service - MAST trousers, ALS	1
00700	T9213	ALS	ADD-ON	Ambulance service - IV drug administration ALS	1
00700	T9214	ALS	ADD-ON	Ambulance service-cardiac monitoring, ALS	1
00700	T9215	ALS	ADD-ON	Ambulance service-defibrillation, ALS	1
00700	Y0050	UNKNOWN	ADD-ON	Labor per hour - DME	0
00710	Y0951	UNKNOWN	ADD-ON	Waiting time	1
00710	Y0953	ALS	BASE	Ambulance service, limited ALS one way	1
00710	Y0955	UNKNOWN	ADD-ON	Air ambulance, mileage	1
00710	Y0959	ALS	ADD-ON	EKG monitoring	1
00710	Z9998	UNKNOWN	UNKNOWN	No description	0
00720	T0051	UNKNOWN	ADD-ON	Ambulance night call, holidays, or weekends	1
00720	T0052	UNKNOWN	ADD-ON	Ambulance attendant, additional	1
00720	T0060	ALS	ADD-ON	EKG monitoring	1
00720	T0071	ALS	ADD-ON	Defibrillation supplies	1
00720	T0072	ALS	ADD-ON	EKG supplies	1
00720	T0073	ALS	ADD-ON	Intubation supplies	1
00720	T0074	ALS	ADD-ON	Suction supplies	1
00720	T0167	BLS	BASE		1
00720	T0220	ALS	ADD-ON	Drug supply	1
00720	T0231	UNKNOWN	ADD-ON	Cervical collar	1
00720	T0233	UNKNOWN	ADD-ON	Disposable supplies	1
00740	T0001	ALS	ADD-ON	Nonreuseable items (oxygen masks, etc.)	1
00740	T0003	ALS	ADD-ON	EKG monitoring	1
00740	T0004	ALS	ADD-ON	IV administration and set-up	1
00740	T0005	ALS	ADD-ON	Defibrillation	1
00740	T0006	ALS	ADD-ON	Anti-shock trousers	1
00740	T0007	ALS	ADD-ON	Esophageal intubation	1
00740	T0008	UNKNOWN	ADD-ON	First aid	1
00751	W5756	UNKNOWN	ADD-ON	Face mask	1
00780	W0300	UNKNOWN	UNKNOWN		0
00780	Y0211	UNKNOWN	UNKNOWN		0

Level 3 Local Codes

Table A 2. Mapping of Level III HCPCS (Local) Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
00510	W9000	UNKNOWN	UNKNOWN	No description	0
00510	W9092	ALS	ADD-ON	ALS specialized service, EKG monitoring telemetry	1
00520	Z9410	ALS	ADD-ON	EKG tracing by an ALS ambulance company only	1
00520	Z9410	ALS	ADD-ON	EKG tracing by an ALS ambulance company only	1
00520	Z9510	UNKNOWN	ADD-ON	Catheter and insert tray	1
00542	Y0001	BLS	BASE	Ambulance base rate, one way--non-emergency	1
00542	Y0002	UNKNOWN	ADD-ON	Medical transportation ambulance night call 7 p.m.	1
00542	Y0014	ALS	ADD-ON	Drug supplies in ambulance (itemize)	1
00542	Y0016	ALS	ADD-ON	Telemetry service	1
00542	Y0021	AIR	BASE	Air ambulance base rate	1
00542	Y0022	UNKNOWN	ADD-ON	Air ambulance per mile	1
00542	Y0023	UNKNOWN	ADD-ON	Air ambulance federal excise tax 8 percent	1
00542	Y4310	UNKNOWN	ADD-ON	Catheter supplies	1
00542	Y4680	UNKNOWN	ADD-ON	Hemorage	1
00542	Y6759	UNKNOWN	ADD-ON	Sales tax	1
00550	Y1015	BLS	BASE	Ambulance service, BLS return trip	1
00570	Z0065	ALS	BASE	Ambulance service, ALS base rate within locality	1
00570	Z0224	ALS	ADD-ON	Cardiac monitoring during an ambulance trip	1
00570	Z0466	UNKNOWN	ADD-ON	Oxygen mask	1
00580	Z0065	ALS	BASE	Ambulance aer, ALS base rate within locality	1
00580	Z0224	ALS	ADD-ON	Cardiac monitoring during an ambulance trip	1
00580	Z0404	UNKNOWN	ADD-ON	Oxygen	1
00621	W0028	UNKNOWN	ADD-ON	Hospital bed	0
00621	W0029	UNKNOWN	ADD-ON	Hospital bed	0
00621	W0030	UNKNOWN	ADD-ON	Hospital bed	0
00621	W0377	UNKNOWN	ADD-ON	Wheelchair	0
00621	W8715	ALS	ADD-ON	Lasix 40 mg	1
00621	W8960	ALS	ADD-ON	Valium -10 mg	1
00621	W4924	UNKNOWN	ADD-ON	Tape etc.	1
00621	W8964	UNKNOWN	ADD-ON	Prosthetic/orthotic supplier visit to home, NH, or	0
00621	W9290	ALS ?	ADD-ON	Ophthalmological services	0
00621	W9842	UNKNOWN	ADD-ON	Urinary irrigation kit	1
00621	W9845	UNKNOWN	ADD-ON	Prosthetic irrigation skin	1
00621	W9847	UNKNOWN	ADD-ON	Ostomy deod/germicides	1
00621	W9848	UNKNOWN	ADD-ON	Skin barrier w/flange	1
00621	W9913	UNKNOWN	ADD-ON	Cataract lens	0
00621	W9962	BLS	UNKNOWN	Ambulance service, BLS night service	1
00621	W9967	ALS	UNKNOWN	Ambulance service, ALS night service	1
00630	Y1617	UNKNOWN	ADD-ON	Oxymizer; nasal cannula	1
00630	Y9004	ALS	ADD-ON	Emergency	1
00630	Y9014	UNKNOWN	ADD-ON	Oatorn mileage for patient traveling to home, nurs	1
00630	Y9043	ALS	BASE	ALS trip from hospital to hospital	1
00630	Y9045	ALS	BASE	ALS trip plus mileage outside of locality	1
00630	Y9050	UNKNOWN	ADD-ON	Ambulance night service	1
00630	Y9101	BLS	ADD-ON	BLS MAST application	1
00640	Y0012	UNKNOWN	ADD-ON	Additional attendant	1
00640	Y0020	ALS	ADD-ON	Blood drawing	1
00640	Z3053	UNKNOWN	ADD-ON	Ostomy	1
00645	Y0012	UNKNOWN	UNKNOWN	No description	0
00645	Y0020	BLS	BASE	Non-emergency local	1
00645	Y0025	BLS	BASE	Round trip local	1
00645	Y0630	UNKNOWN	ADD-ON	No description	0
00645	Z1632	UNKNOWN	ADD-ON	No description	0
00645	Z3002	UNKNOWN	ADD-ON	No description	0

Level 3 Local Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD-ON	DESCRIPTION	AMBULANCE (1-YES)
00000	W0906	ALS	ADD-ON	IV therapy	1
00000	W3006	ALS	ADD-ON	Injection lidocaine	1
00000	W3007	ALS	ADD-ON	Injection, lidocaine	1
00000	W3701	ALS	ADD-ON	Injection, 050W, dextrose 50% in water	1
00000	W3702	ALS	ADD-ON	Injection dobutamine	1
00000	W3703	ALS	ADD-ON	Injection dopamine	1
00000	W3704	ALS	ADD-ON	Injection, epinephrine, 1:1000/ml	1
00000	W3705	ALS	ADD-ON	Injection, epinephrine, 1:10,000 up to 10ml	1
00000	W3706	ALS	ADD-ON	Injection, narcan, nalaxone	1
00000	W3708	ALS	ADD-ON	Injection, sodium bicarbonate	1
00000	Y5050	ALS	ADD-ON	IV administration	1
00000	Y5051	ALS	ADD-ON	05W 500 cc	1
00000	Y5053	ALS	ADD-ON	Sodium bicarbonate	1
00000	Y5070	ALS	ADD-ON		1
00000	Y5102	UNKNOWN	ADD-ON		1
00000	Y5103	UNKNOWN	ADD-ON	Trachea care kit	1
00000	Y6002	BLS	BASE		1
00000	Y6100	UNKNOWN	UNKNOWN	No description	1
00000	Y6102	UNKNOWN	ADD-ON	Night call	0
00000	Y6103	UNKNOWN	ADD-ON	Additional Attendant	1
00000	Y6105	UNKNOWN	ADD-ON	Gauze pads or dressing	1
00000	Y8060	ALS	ADD-ON		1
00000	Y8069	UNKNOWN	ADD-ON		1
00910	Y0341	UNKNOWN	ADD-ON	Oxygen, tubing (per foot)	1
00910	Y0349	UNKNOWN	ADD-ON	Nebulizer	1
00910	Z0101	ALS	ADD-ON	Sodium bicarbonate	0
00910	Z6006	ALS	ADD-ON		1
00910	Z6198	UNKNOWN	ADD-ON	Trach/gastre suction catheters	1
00910	Z6345	UNKNOWN	ADD-ON	Infusion bags	1
00910	Z6346	ALS	ADD-ON		1
00930	W5700	UNKNOWN	UNKNOWN	Medicare secondary payment-ESRD, workign aged	1
00930	W5702	UNKNOWN	UNKNOWN	Medicare secondary daniel	1
00930	W6100	ALS	ADD-ON	Ambulance service, EKG tracing	1
00930	W6103	UNKNOWN	ADD-ON	No description	1
00930	W6105	UNKNOWN	ADD-ON	Ambulance night charge	1
00951	W0150	ALS	BASE	ALS base rate	1
00951	W0450	UNKNOWN	ADD-ON	Psychotherapy 15 minutes	0
00951	W0460	UNKNOWN	ADD-ON	Psychotherapy one hour	0
00951	W1065	UNKNOWN	ADD-ON	02 tank	1
00951	W1100	UNKNOWN	ADD-ON	Detron atix	1
00951	W1105	UNKNOWN	ADD-ON	Monolet lancets	1
00951	W1225	UNKNOWN	ADD-ON	Supplies	1
00951	X0050	UNKNOWN	ADD-ON	Ostectomy	1
00951	Y0225	UNKNOWN	ADD-ON	TAT	0
00973	W1006	UNKNOWN	ADD-ON	Physical medicine	0
00973	Z6000	UNKNOWN	ADD-ON	No description	0
00973	Z6332	BLS	BASE	No description	0
00973	Z6330	UNKNOWN	ADD-ON	No description	1
01020	Y0001	AIR	ADD-ON	Air ambulance base rate	0
01020	Y0002	UNKNOWN	ADD-ON	Air ambulance mileage	1
01020	Y0003	AIR	ADD-ON	Air ambulance hourly	1
01020	Y0160	ALS	ADD-ON	EKG monitor by ALS personnel under physician instr	1
01020	Y0165	UNKNOWN	ADD-ON	Emergency charge	1
01020	Y0230	UNKNOWN	ADD-ON	Ice pack	1

Level 3 Local Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
01020	T0245	UNKNOWN	ADD-ON	Splint (cardboard)	1
01030	Z0017	UNKNOWN	ADD-ON	Ambulance tax and/or gas surcharge	1
01030	Z0018	UNKNOWN	ADD-ON	Air, mileage	1
01290	Z0010	UNKNOWN	UNKNOWN	No description	0
01290	Z9000	UNKNOWN	UNKNOWN	No description	0
01290	Z9001	UNKNOWN	UNKNOWN	No description	0
01290	Z9002	UNKNOWN	UNKNOWN	No description	0
01290	Z9003	UNKNOWN	UNKNOWN	No description	0
01360	H0920	ALS	ADD-ON	Narcan	1
01360	Z9501	ALS	ADD-ON	Cardiac monitoring	1
01360	Z9510	ALS	BASE	ALS all inclusive minimum	1
01370	W7000	BLS	BASE	Ambulance basic trip rate	1
01370	W7003	UNKNOWN	UNKNOWN	Ambulance night rate	1
01370	W7005	BLS	BASE	Amb other basic trip rates	1
01370	W7008	BLS	BASE	Ambulance return trip	1
01370	W7011	ALS	BASE	Basic ALS transfer	1
01380	Y0001	AIR	BASE	Air ambulance base rate	1
01380	Y0002	AIR	BASE	Certified air ambulance, any type, patient mileage	1
01380	Y0003	UNKNOWN	ADD-ON	Certified air ambulance, hourly	1
01380	Y0080	UNKNOWN	ADD-ON	Hospital bed	0
01380	Y0085	UNKNOWN	ADD-ON	Hospital bed	0
01380	Y0095	UNKNOWN	ADD-ON	Hospital bed	0
01380	Y0140	UNKNOWN	ADD-ON	Wheelchair	0
01380	Y0150	ALS	ADD-ON		1
01380	Y0155	UNKNOWN	ADD-ON		1
01380	Y0160	ALS	ADD-ON	EKG monitor by ALS	1
01380	Y0165	UNKNOWN	ADD-ON	Emergency service	1
01380	Y0170	UNKNOWN	ADD-ON	Night rate	1
01380	Y0175	ALS	ADD-ON	Intubation	1
01380	Y0190	UNKNOWN	ADD-ON	CPR	1
01380	Y0200	ALS	ADD-ON	Blood draw	1
01380	Y0205	UNKNOWN	ADD-ON	Burn sheet	1
01380	Y0215	UNKNOWN	ADD-ON	Cervical collar	1
01380	Y0220	UNKNOWN	ADD-ON	Miscellaneous disposable supplies, emesis basin	1
01380	Y0230	UNKNOWN	ADD-ON	Ice pack	1
01380	Y0235	UNKNOWN	ADD-ON	Sling	1
01380	Y0240	ALS	ADD-ON	MAST pants	1
01380	Y0245	UNKNOWN	ADD-ON	Splint	1
01380	Y0250	UNKNOWN	ADD-ON	Surgi-pads	1
01380	Y0255	UNKNOWN	ADD-ON	Tape	1
01380	Y0260	UNKNOWN	ADD-ON	Disposable thermometer	1
01380	Y0265	UNKNOWN	ADD-ON	Underpad	1
01380	Y0270	ALS	ADD-ON	EKG strips	1
01380	Y0275	ALS	ADD-ON	Electrodes	1
01380	Y0285	UNKNOWN	ADD-ON	Male adaptor	1
01380	Y0290	ALS	ADD-ON	IV set-up	1
01380	Y0295	UNKNOWN	ADD-ON	Airway	1
01380	Y0405	UNKNOWN	ADD-ON	Tank demurrage	1
01380	Y0430	UNKNOWN	ADD-ON	Sandbag	1
01380	Y5070	ALS	ADD-ON	Injection bretylium	1
01380	Y5175	ALS	ADD-ON	Injection dopamine	1
01380	Y5255	ALS	ADD-ON	Infection heparin lock (flush) per 1cc (10 units)	1
01380	Y5263	ALS	ADD-ON	Injection lidocaine	1
01380	Y5346	ALS	ADD-ON	Injection narcan	1

Level 3 Local Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
02050	Y0001	BLS	BASE	Ambulance-base rate	1
02050	Y0002	UNKNOWN	ADD-ON	Ambulance-night	1
02050	Y0003	UNKNOWN	ADD-ON	Ambulance emergency	1
02050	Y0011	UNKNOWN	ADD-ON	Covered non-reusable supplies/services	1
02050	Y0013	UNKNOWN	ADD-ON	Third attendant	1
02050	Y0016	ALS	ADD-ON	Telemetry	1
02050	Y0017	ALS	ADD-ON	EKG monitoring	1
02050	Y0021	AIR	ADD-ON	Air ambulance-base rate	1
02050	Y0022	UNKNOWN	UNKNOWN	Air ambulance-mileage	1
02050	Y0023	AIR	ADD-ON	Air ambulance-federal excise tax	1
02050	Y0025	ALS	ADD-ON	IV solution	1
05440	X0300	ALS	ADD-ON	Calcium chloride	1
05440	X0618	ALS	ADD-ON	glucagon	1
05440	X0700	ALS	ADD-ON		1
05440	X0920	ALS	ADD-ON	Narcan	1
05440	X1270	ALS	ADD-ON	Stadol	1
05440	Y1834	ALS	ADD-ON	Intropan	1
05440	Z9501	UNKNOWN	UNKNOWN		1
10071	W5555	UNKNOWN	ADD-ON	Misc. surgery service	0
10071	W7777	UNKNOWN	ADD-ON	Misc. radiology service	0
10071	W8888	UNKNOWN	ADD-ON	Diag. pathology	0
10071	W8889	UNKNOWN	ADD-ON	Clinical lab service	0
10071	W9995	UNKNOWN	ADD-ON	No description	0
10071	W9999	UNKNOWN	UNKNOWN		0
10071	X9064	UNKNOWN	ADD-ON	Service brief	0
10071	X9067	UNKNOWN	ADD-ON	Service limited	0
10071	Z0000	UNKNOWN	UNKNOWN		0
10071	Z0002	UNKNOWN	ADD-ON	Oxygen concentrator	1
10230	W9030	UNKNOWN	ADD-ON	Physical exam	0
10230	W9989	UNKNOWN	ADD-ON	Miscellaneous medical procedure	1
10230	W9999	UNKNOWN	ADD-ON	Cielo transfers	1
10230	X1002	UNKNOWN	ADD-ON	Ambulance-night call	1
10230	X1005	UNKNOWN	ADD-ON	Ambulance - female attendant	1
10230	X1006	ALS	ADD-ON	Ambulance-ALS IV only	1
10230	X1007	ALS	UNKNOWN	Ambulance - ALS full service	1
10240	W9999	UNKNOWN	ADD-ON	Unlisted medicine	0
10240	Y0051	UNKNOWN	ADD-ON	Ambulance night call	0
10240	Y0052	UNKNOWN	ADD-ON	Ambulance attendant, additional	1
10240	Y0069	ALS	ADD-ON	EKG monitoring	1
10240	Y0071	UNKNOWN	ADD-ON	Defibrillation supplies	1
10240	Y0072	ALS	ADD-ON	EKG supplies	1
10240	Y0073	ALS	ADD-ON	Intubation supplies	1
10240	Y0074	UNKNOWN	ADD-ON	Suction supplies	1
10240	Y0147	BLS	BASE	Non-emergency return trip	1
10240	Y0220	ALS	ADD-ON	Drug supply	1
10240	Y0230	UNKNOWN	ADD-ON	Burn sheets	1
10240	Y0231	UNKNOWN	ADD-ON	Cervical collar	1
10240	Y0232	UNKNOWN	ADD-ON	Underpads	1
10240	Y0233	UNKNOWN	ADD-ON	Other disposable supplies	1
10250	W0030	UNKNOWN	ADD-ON	Brief exam	0
10250	W4030	ALS	ADD-ON	Dextran 40, dextran 75, IV drip or infusion (DSU)	1
10250	W4033	ALS	ADD-ON	Furosemide lasix	1
10250	W4060	ALS	ADD-ON	Aminophyllin	1
10250	W9999	UNKNOWN	ADD-ON	Procedure exception code	0

Level 3 Local Codes

CARRIER	HCPCS	ALS/BLS	BASE/ADD	DESCRIPTION	AMBULANCE (1-YES)
10250	Z0007	ALS	ADD-ON	EKG monitor with or without defibrillation	1
10250	Z0009	UNKNOWN	ADD-ON	Colostomy bags	1
10250	Z9998	UNKNOWN	ADD-ON	Procedure exception code	0
10250	Z9999	UNKNOWN	ADD-ON	Noncovered procedures	1
10490	W0043	ALS	ADD-ON	Protisin	1
10490	W5555	UNKNOWN	ADD-ON	Misc. surgery service	0
10490	W7777	UNKNOWN	ADD-ON	Misc. radiology service	0
10490	W8888	UNKNOWN	ADD-ON	Misc. clinical lab procedure	0
10490	W9999	UNKNOWN	ADD-ON		1
10490	W9954	UNKNOWN	ADD-ON	Limited service	0
10490	W9955	UNKNOWN	ADD-ON	Intermediate service	0
10490	Y0002	ALS	ADD-ON	Misc. ALS service	1
10490	Y0003	AIR	BASE	Base rate, air ambulance, (launch fee)	1
10490	Z1057	UNKNOWN	ADD-ON	Hospital bed, without rails variable height	0
11260	W2045	ALS	ADD-ON	Routine venipuncture	1
11260	Y0004	UNKNOWN	ADD-ON	No description	0
11260	Y0005	UNKNOWN	ADD-ON	Bag volue mask	1
11260	Y0007	UNKNOWN	ADD-ON	Burn sheets	1
11260	Y0009	UNKNOWN	ADD-ON	Cervical collar	1
11260	Y0011	UNKNOWN	ADD-ON	Cold pack	1
11260	Y0013	UNKNOWN	ADD-ON	Emesis basin	1
11260	Y0015	ALS	ADD-ON	Endotracheal tube	1
11260	Y0017	ALS	ADD-ON	IV extension set	1
11260	Y0020	ALS	ADD-ON	Drawing blood, ALS	1
11260	Y0024	ALS	ADD-ON	IV administration set	1
11260	Y0028	ALS	ADD-ON	IV catheter	1
11260	Y0035	ALS	ADD-ON	Oropharyngeal airway	1
11260	Y0039	ALS	ADD-ON	Piggyback (secondary administration set	1
11260	Y0044	UNKNOWN	ADD-ON	Splints	1
11260	Y0046	ALS ?	ADD-ON	Suction catheter	1
13110	Y0000	BLS	BASE	Ambulance round trip, no mileage	1
13110	Y0045	BLS	BASE	Ambulance trip hospital to hospital	1
13110	Z4560	ALS	ADD-ON	Narcan	1
13340	W9010	UNKNOWN	ADD-ON	Admission to observation unit	0
13340	Y0000	BLS	BASE	Ambulance round trip no mileage	1
13340	Y0020	BLS	BASE	Amb round trip no mileage with oxygen	1
14330	W0021	BLS	BASE	Ambulance service outside carrier's jurisdiction	1
14330	W0540	BLS	BASE	Ambulance service, BLS base rate evening, weekends	1
14330	W0590	ALS	BASE	Ambulance service, ALS emergency, evenings, weeken	1
14330	W0740	UNKNOWN	ADD-ON	Oxygen	1
14330	W0770	UNKNOWN	UNKNOWN		0
14330	W9009	UNKNOWN	ADD-ON	Comprehensive consultation in hospital	0
14330	W9040	UNKNOWN	ADD-ON	Foot care	0
16360	Z5000	UNKNOWN	ADD-ON	Mileage outside metropolitan area	1
16360	Z5010	UNKNOWN	ADD-ON	No description	0
16360	Z7007	UNKNOWN	ADD-ON	Surgical pads	1
16360	Z7900	UNKNOWN	ADD-ON	No description	0
16510	Z5010	BLS	BASE	Ambulance transportation, base rate with oxygen	1
21200	Y9211	UNKNOWN	UNKNOWN		0
21200	Y9212	UNKNOWN	UNKNOWN		0
21200	Y9213	UNKNOWN	UNKNOWN		0
21200	Y9214	UNKNOWN	UNKNOWN		0
21200	Y9215	UNKNOWN	UNKNOWN		0

APPENDIX B

Table B-1: Mapping of Local Modifiers to HCPS Modifiers Indicating Origin and Destination of Ambulance Runs

FROM	TO	HCPS MODIFER	LOCAL MODIFERS MODIFER/CARRIER
Extended Care Facility(ECF)/Nursing Home (NH)	ECF/NH	EE:	
ECF/NH	Hospital	EH:	ZA/660 : ZE/660 : ZF/660 : ZF/7[illegible]
ECF/NH	Physician's Office	EP:	EF/621 : EH/951
ECF/NH	Home	ER:	
Hospital	ECF/NH	HE:	ZB/660:
Hospital	Hospital	HH	WD/621
Hospital	Home	HR:	ZH/740:
Hospital	Hospital (Return)	HT	
Physician's Office	Hospital	PH:	ZO/801:
Home	ECF/NH	RE:	
Home	Hospital	RH:	ZH/740 : ZH/801
Home	ECF/Office	RR:	RA/621 : ZE/740:
Scene	Hospital	SH:	
Physician's Office	ECF/NH/Home	PR	WR/621 : WS/621
Hospital	Physician's Office	Other	WD/621
Scene	ECF/NH	Other	WE/621
Scene	Physician's Office	Other	WF/621
Scene	Home	Other	WG/621
Physician's Office	Physician's Office	Other	WP/621
ECF/NH	Hospital (Return)	ZG	ZG/660
ECF/NH/Home	Renal	ZH	ZH 60: ZJ/660 : Z/740 : [illegible]/840
Renal	Home/NH/ECF	ZI	ZI/660 : ZI/740 : ZK/740 [illegible]
Home	ECF/NH (Enroute to Hosp.)	XX	
Unclassified*		UC	

* Unclassified includes HCPCS Modifer = UC, all missing and unreadable modifiers.

APPENDIX C

...ble C ... Range and Standard Deviations of
Selected Procedure Codes, by Carrier

SAS

		ALBANIUS				
CARRIER CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
00510	A0010	29905	24.16	71.53	9.06	$60.29
	A0020	64461	0.89	1.67	0.11	$1.36
	A0221	9032	1.00	2.00	0.12	$1.43
	A0223	12236	16.19	81.25	10.70	$69.61
00520	A0010	30732	60.51	60.51	0.00	$60.51
	A0020	15073	1.32	1.32	0.00	$1.32
	A0220	4702	102.71	102.71	0.00	$102.71
	A0221	876	1.49	1.49	0.00	$1.49
	A0223	612	65.13	65.13	0.00	$65.13
00528	A0010	77470	60.52	124.80	15.04	$93.30
	A0020	45480	1.62	3.45	0.65	$2.57
	A0220	8071	155.78	206.96	8.25	$196.26
	A0221	6250	2.01	4.05	0.65	$2.57
	A0223	746	14.47	124.96	29.20	$115.49
00542	A0010	99010	51.50	163.76	12.71	$127.90
	A0020	160702	3.03	7.00	0.46	$5.40
	A0220	73736	6.67	280.00	23.03	$261.51
	A0221	65502	2.75	8.00	0.46	$5.65
00550	A0010	21881	50.75	432.35	11.51	$102.51
	A0020	20216	1.00	6.40	0.70	$3.62
	A0221	11701	1.11	9.27	0.65	$4.36
	A0223	12288	65.00	256.75	10.97	$174.24
00578	A0010	13953	40.00	162.00	7.33	$60.37

(CONTINUED)

Source: 1987 BMAD Procedure File.

CARRIER CODE	HCPCS PROCEDURE CODE	ALWNTUS				
		N	MIN	MAX	STD	MEAN
00570	A0020	3612	1.93	3.33	0.11	$2.04
	A0220	52	137.00	275.00	21.05	$156.12
	A0221	1	2.00	2.00	.	$2.00
	A0223	2	137.50	137.50	0.00	$137.50
00580	A0010	20737	30.00	106.00	2.45	$57.93
	A0020	10426	1.09	2.45	0.03	$2.45
	A0220	1117	29.00	65.84	5.13	$41.06
	A0221	1	2.00	2.00	.	$2.00
	A0223	931	50.00	50.00	0.00	$50.00
00590	A0010	204065	35.67	216.00	0.14	$69.21
	A0020	203211	1.11	25.41	0.62	$2.69
	A0220	44002	75.00	218.25	13.50	$120.30
	A0221	25302	1.37	4.00	0.23	$2.55
00621	A0010	203157	2.10	171.27	14.94	$67.44
	A0020	195926	0.05	39.00	0.00	$2.55
	A0220	36226	7.96	290.00	17.96	$107.09
00630	A0010	02509	36.00	76.00	9.19	$65.22
	A0020	70046	1.31	190.00	0.05	$2.35
	A0220	431	21.50	260.00	46.00	$132.44
	A0221	13748	1.49	11.50	0.24	$2.64
	A0223	14172	56.00	250.00	16.15	$131.44
00640	A0010	33042	43.37	66.00	6.19	$53.59
	A0020	23092	1.34	1.96	0.23	$1.60

(CONTINUED)

		ALWHIUS				
CARRIER CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
00640	A0220	4716	79.37	102.36	7.76	$93.16
00645	A0010	10650	30.00	79.66	21.12	$56.20
	A0020	10540	1.54	4.49	1.36	$2.69
	A0220	1296	92.09	126.01	5.64	$124.49
00650	A0010	8622	35.00	61.30	1.99	$55.51
	A0020	9269	1.20	2.67	0.06	$1.55
	A0220	2060	101.00	119.57	6.55	$116.00
	A0221	4486	2.00	2.12	0.06	$2.07
	A0223	6575	69.25	71.52	0.65	$70.05
00660	A0010	1017727	13.00	72.00	0.67	$53.01
	A0020	58903	1.00	2.00	0.16	$1.59
	A0221	1226	1.49	2.20	0.11	$1.69
	A0223	9074	50.00	85.00	0.21	$79.33
00690	A0010	75524	10.00	142.00	36.00	$85.92
	A0020	31539	1.40	2.21	0.14	$1.87
00700	A0010	2613591	92.09	127.00	11.13	$116.01
	A0020	1953216	3.00	6.00	0.45	$5.49
	A0220	1652	135.44	180.52	20.03	$170.63
	A0221	6257	4.95	6.06	0.41	$5.00
	A0223	3505	96.51	126.17	11.09	$121.19
00710	A0010	212596	10.00	471.00	5.69	$88.00
	A0020	190276	0.10	6.91	0.16	$1.93
	A0220	31298	20.33	525.00	15.48	$175.13

(CONTINUED)

		ALMRIUS				
CA001E0 CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
00710	A0221	28416	1.00	2.03	0.00	92.03
00720	A0010	12329	77.49	84.96	0.05	$77.59
	A0020	11566	2.81	2.85	0.00	$2.05
	A0220	1042	96.50	240.10	6.64	$247.09
	A0225	1063	159.67	241.21	4.37	$240.97
00740	A0010	9099	12.63	232.25	22.90	$63.96
	A0020	15560	1.15	3.31	0.64	$2.12
	A0220	4840	164.00	277.00	2.50	$276.09
	A0221	7407	1.25	3.50	0.00	$3.19
	A0225	2560	60.06	247.00	44.11	$177.30
00751	A0010	0963	30.00	102.00	7.50	$02.00
	A0020	2902	0.75	2.50	0.09	$1.79
	A0220	14	99.50	173.00	20.42	$152.00
	A0221	4807	3.95	3.96	0.00	$3.96
	A0225	113	100.00	161.50	10.10	$122.35
00780	A0010	25339	56.01	132.00	1.36	$50.50
	A0020	15405	2.15	2.19	0.02	$2.10
	A0220	232	56.41	109.65	19.57	$101.53
	A0221	552	2.48	2.64	0.00	$2.57
	A0223	360	02.53	07.09	7.24	$07.53
00001	A0010	56122	7.25	122.27	16.16	$76.53
	A0020	11296	1.50	2.35	0.00	$2.02
	A0220	13569	16.11	250.11	33.01	$150.90

(CONTINUED)

		ALUMTUS				
CARRIER CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
00001						
	A0221	896	1.51	2.43	0.29	$1.91
00003	A0010	39093	40.00	107.65	1.04	$105.50
	A0020	206101	0.50	3.00	0.01	$2.00
	A0220	5462	70.75	103.02	19.20	$179.23
00020	A0010	14966	15.00	97.00	10.41	$56.56
	A0020	12410	0.40	10.44	0.72	$1.21
	A0221	2495	0.31	3.00	0.45	$1.99
	A0223	3651	65.00	255.62	51.90	$136.51
00065	A0010	470016	15.00	235.00	16.46	$87.66
	A0020	181701	0.52	13.00	0.10	$1.60
	A0220	25360	10.00	353.00	41.42	$133.50
	A0221	4972	0.40	3.00	0.40	$2.25
	A0223	4207	47.50	292.19	30.90	$190.01
00070	A0010	22032	70.50	93.60	0.17	$83.93
	A0020	3903	1.91	2.00	0.00	$1.91
	A0220	397	93.55	94.00	0.02	$93.55
	A0221	116	2.00	2.00	0.00	$2.00
00080	A0010	6	50.33	50.33	0.00	$50.33
	A0020	9302	1.39	2.00	0.02	$1.62
	A0220	4458	56.50	60.00	0.10	$56.59
	A0221	1176	1.74	2.00	0.01	$1.76
	A0223	5160	57.00	60.00	0.10	$57.62
00900	A0010	72170	20.66	142.00	25.03	$73.64

(CONTINUED)

		ALWNTUS				
		N	MIN	MAX	STD	MEAN
CARRIER CODE	HCPCS PROCEDURE CODE					
00900	A0020	120800	1.00	3.63	0.56	$2.10
	A0220	37786	5.00	373.00	32.27	$112.03
	A0221	30259	1.00	3.66	0.68	$2.04
	A0223	23056	50.00	192.00	10.17	$76.78
00910	A0010	11420	40.43	95.25	5.56	$81.00
	A0020	9990	2.31	5.00	0.50	$4.07
	A0220	4	141.50	200.00	33.77	$170.75
	A0221	3955	5.00	5.23	0.05	$5.10
	A0223	261	90.78	200.00	21.50	$153.40
00930	A0010	47277	55.00	133.50	5.52	$113.00
	A0020	44161	3.00	206.00	1.31	$4.24
	A0220	11670	131.67	208.13	9.26	$188.65
	A0221	9789	2.00	5.20	0.28	$4.41
00951	A0010	70686	30.00	111.00	3.71	$82.51
	A0020	52312	1.43	3.00	0.01	$1.98
	A0220	2102	93.25	225.00	10.15	$161.15
	A0221	1610	2.59	3.00	0.01	$2.59
	A0223	556	177.62	230.00	16.01	$197.08
01020	A0010	1350	40.17	51.00	1.77	$48.34
	A0020	159	1.31	1.31	0.00	$1.31
	A0221	1	1.50	1.50	.	$1.50
	A0223	123	51.00	160.00	9.69	$140.40
01030	A0010	36223	33.00	117.00	16.35	$103.13

(CONTINUED)

		ALMITUS				
		N	MIN	MAX	STD	MEAN
CARRIER CODE	HCPCS PROCEDURE CODE					
01030	A0020	41630	0.50	5.17	1.09	$4.25
	A0220	13523	24.33	197.00	22.24	$160.94
	A0221	388	2.50	5.38	1.08	$4.60
01120	A0010	4550	25.00	156.00	5.10	$125.43
	A0020	725	4.58	4.58	0.00	$4.58
	A0220	913	132.75	234.00	6.90	$134.87
	A0221	797	4.58	4.58	0.00	$4.58
01290	A0010	10399	12.00	144.01	13.05	$116.98
	A0020	11848	0.37	5.11	0.91	$4.22
	A0220	1577	50.00	300.00	9.16	$201.34
	A0221	7	5.76	5.76	0.00	$5.76
01360	A0010	12251	16.00	65.52	0.77	$65.51
	A0020	11747	0.57	1.94	0.02	$1.94
	A0220	2970	13.50	199.05	4.81	$198.93
01370	A0010	18819	18.00	162.30	30.22	$93.58
	A0020	33830	0.36	3.00	0.35	$2.03
	A0220	11191	50.67	312.17	24.34	$204.85
	A0221	299	2.00	2.16	0.01	$2.16
01380	A0010	10630	10.00	158.00	35.57	$114.94
	A0020	22837	0.68	150.00	1.26	$3.44
	A0220	675	65.00	250.00	55.50	$194.89
	A0221	9455	0.31	158.00	2.42	$4.57
	A0223	11068	2.00	267.67	62.13	$168.78

(CONTINUED)

		ALWNTUS				
CA801E8 CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
02050						
	A0010	69023	62.22	168.26	19.60	$105.77
	A0020	270516	3.00	6.17	1.20	$5.12
	A0220	23769	17.00	275.00	48.74	$175.08
	A0221	17644	3.00	6.11	0.56	$5.41
05130	A0010	7406	82.37	90.98	4.29	$86.26
	A0020	6714	1.99	2.16	0.08	$2.06
	A0220	2	2.50	2.50	0.00	$2.50
	A0223	2389	125.00	164.00	2.04	$156.79
05440	A0010	54150	21.58	58.50	3.26	$51.89
	A0020	8883	1.22	1.46	0.02	$1.22
	A0220	1683	85.00	122.00	2.81	$98.70
	A0221	779	1.29	1.38	0.02	$1.37
	A0223	7322	65.58	100.00	13.04	$75.43
05538	A0010	2466	58.38	58.38	0.00	$58.38
	A0020	1315	1.87	1.87	0.00	$1.87
	A0220	173	131.47	131.47	0.00	$131.47
	A0221	266	3.26	3.26	0.00	$3.26
	A0223	194	41.60	41.60	0.00	$41.60
10071	A0010	84422	30.00	168.00	23.22	$85.04
	A0020	84321	0.77	12.36	1.13	$2.55
	A0220	14276	2.00	350.00	40.65	$150.32
	A0221	8314	0.47	200.00	2.75	$3.54
	A0223	3673	10.00	300.38	46.79	$139.92

(CONTINUED)

		ALUMTUS				
		N	MIN	MAX	STD	MEAN
CARRIER CODE	HCPCS PROCEDURE CODE					
10230	A0010	93565	20.00	100.00	1.99	$96.81
	A0020	43829	2.57	3.35	0.03	$3.06
	A0220	60	55.00	220.68	49.20	$133.47
	A0221	1	4.43	4.43	.	$4.43
	A0223	60	157.00	214.96	20.31	$185.27
10240	A0010	18778	60.00	68.44	0.06	$68.29
	A0020	14126	1.92	3.00	0.01	$2.14
	A0220	2600	189.15	228.67	1.98	$189.20
	A0221	1586	2.85	3.00	0.01	$2.85
	A0223	1	375.00	375.00	.	$375.00
10250	A0010	21654	45.00	70.31	0.70	$51.83
	A0020	10400	1.17	1.42	0.01	$1.20
	A0220	56	86.00	89.20	0.43	$89.14
	A0221	1	1.40	1.40	.	$1.40
	A0223	2793	85.62	86.50	0.02	$85.62
10490	A0010	48309	50.37	55.45	0.10	$55.44
	A0020	21604	1.67	1.82	0.00	$1.82
	A0220	3570	103.49	103.49	0.00	$103.49
	A0221	777	2.01	2.01	0.00	$2.01
	A0223	315	42.92	57.50	1.16	$43.01
11260	A0010	57048	35.60	81.50	14.62	$62.98
	A0020	36513	0.87	2.00	0.20	$1.24
	A0220	2920	28.33	112.00	19.85	$85.55

(CONTINUED)

		ALWNIUS				
CARRIER CODE	HCPCS PROCEDURE CODE	N	MIN	MAX	STD	MEAN
11240						
	A0221	5918	0.50	1.67	0.17	$1.18
	A0225	8123	35.00	81.50	14.19	$60.83
13110	A0010	100349	60.67	65.00	1.35	$64.25
	A0020	66955	1.31	2.00	0.06	$1.81
	A0225	6839	55.57	75.00	0.39	$62.57
13310	A0010	99620	60.80	71.02	0.83	$63.93
	A0020	75002	2.08	2.50	0.02	$2.33
13340	A0010	68214	15.00	45.87	0.51	$45.55
	A0020	18306	1.27	1.42	0.02	$1.28
	A0220	5408	18.00	62.19	4.20	$61.44
	A0221	2058	1.20	1.23	0.01	$1.20
	A0225	8852	44.40	47.26	0.11	$46.42
14330	A0010	4334	129.89	129.89	0.00	$129.89
	A0220	2	183.00	183.00	0.00	$183.00
16360	A0010	98647	4.00	140.40	23.88	$76.17
	A0020	171788	1.00	5.19	0.70	$2.33
	A0220	18828	5.03	472.33	102.96	$253.96
	A0221	22357	1.00	4.07	0.84	$2.58
	A0225	14713	15.00	402.00	81.18	$226.16
16510	A0010	22796	23.00	75.08	12.34	$54.68
	A0020	36897	1.00	4.69	0.41	$1.75
	A0220	2869	30.00	259.32	37.79	$153.99
	A0221	6131	1.02	2.52	0.43	$1.87

(CONTINUED)

		ALWAYS				
		N	MIN	MAX	STD	MEAN
CARRIER CODE	HCPCS PROCEDURE CODE					
16510						
	A0223	5206	50.00	142.50	21.87	$109.93
21200	A0010	27619	40.00	81.68	0.20	$40.16
	A0020	20200	1.00	5.00	0.17	$2.24
	A0220	955	55.81	107.13	21.31	$70.20
	A0221	2422	1.78	2.86	0.39	$2.47
	A0223	12641	83.96	108.94	7.56	$95.38

Table C-2: Comparison of Prevailing Charges to Average Reimbursement for Selected HCPCS Codes, 1987

Region	State	Carrier Number	BLS Base Rate, One Way A0010		BLS Mileage A0020		ALS Base Rate, Inclusive A0220		ALS Mileage A0221	
			Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.
V	Michigan	710		88.08		1.93		173.13		2.03
V	Minnesota	720	140.00	77.59	4.00	2.05	163.00	247.89	---	----
V	Minnesota	10240	78.00	68.29	3.00	2.14	260.00	189.28	6.00	2.85
V	Ohio	16360	106.00	76.17	3.00	2.35	194.00	253.94	2.00	2.58
V	Wisconsin	951		82.51		1.98		161.15		2.59
VI	Arkansas	520	100.00	60.51	2.00	1.32	375.00	182.71	3.00	1.49
VI	Louisiana	528	137.00	93.30	3.00	2.57	316.00	196.26	3.00	2.57
VI	New Mexico	1360	90.00	65.51	3.00	1.94	220.00	198.93	---	----
VI	Oklahoma	1370	177.00	93.58	3.00	2.03	64.00	284.85	---	2.18
VI	Texas	900	83.00	73.64	2.00	2.18	66.00	112.83	2.00	2.04
VII	Iowa	640	0.00	53.59	0.00	1.60	0.00	93.16	---	----
VII	Kansas	650		55.51		1.55		116.08		2.07
VII	Kansas/Missouri	740	66.00	63.94	2.00	2.12	0.00	276.89	2.00	3.19
VII	Missouri	11260	0.00	62.98	0.00	1.24	0.00	85.55	0.00	1.18
VII	Nebraska	645	0.00	56.20	0.00	2.69	0.00	124.49	---	----
VIII	Colorado	550	165.00	102.51	6.00	3.62	---	----	6.00	4.36
VIII	Montana	751	137.00	82.00	3.00	1.79	---	152.00	5.00	3.96
VIII	North/South Dakota	820	93.00	56.56	2.00	1.21	---	---	6.00	1.99
VIII	Utah	910	120.00	81.08	6.00	4.07	---	170.75	---	5.10
VIII	Wyoming	5530	100.00	58.38	3.00	1.87	164.00	131.47	4.00	3.26
IX	Arizona	1030	85.00	103.13	3.00	4.25	82.00	168.94	2.00	4.60
IX	California	2050	120.00	105.77	7.00	5.12	243.00	175.88	7.00	5.41
IX	California	542	177.00	127.90	7.00	5.40	297.00	261.51	7.00	5.65
IX	Hawaii	1120		125.43		4.58		134.87		4.58
IX	Nevada	1290	62.00	116.98	4.00	4.22		281.34		5.76

Table C-2: Comparison of Prevailing Charges to Average Reimbursement for Selected HCPCS Codes, 1987

Region	State	Carrier Number	BLS Base Rate, One Way A0010		BLS Mileage A0020		ALS Base Rate, Inclusive A0220		ALS Mileage A0221	
			Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.	Prevailing	Avg. Reimb.
X	Alaska	1020	160.00	48.34	2.00	1.31	---	----	---	1.50
X	Idaho	5130	120.00	86.26	3.00	2.06	---	----	---	2.50
X	Oregon	1380	167.00	114.94	6.00	3.44	120.00	194.89	7.00	4.57
X	Washington	930	149.00	113.00	6.00	4.24	233.00	188.65	4.00	4.41
	Railroad	10071		83.04		2.55		150.32		3.54

Source: Project HOPE Calculations from the 1987 BMAD Procedure and Prevailing Charge files.

APPENDIX D

Table 8-1 Ambulance Allowed Charges By Carrier and Region, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Percent of Total
I	Connecticut	10230	The Travelers	11,598,460	1.9%
I	Maine	21200	BS of Mass/Maine	3,112,485	0.5%
I	Massachusetts	700	BS of Massachusetts	41,622,641	6.9%
I	New Hampshire/Vermont	780	Massachusetts BC/BS	2,176,890	0.4%
I	Rhode Island	870	BS of Rhode Island	2,814,112	0.3%
	REGION I TOTAL			60,524,588	10.1%
II	New Jersey	13310	Prudential	8,480,762	1.4%
II	New York	14330	Group Health	974,305	0.2%
II	New York	801	BS of Western New York	8,426,741	1.4%
II	New York	803	Empire BC/BS	44,130,264	7.3%
II	Puerto Rico/V.I.	973	Seguros	333,430	0.1%
	REGION II TOTAL			62,345,502	10.4%
III	Delaware	570	Pennsylvania Blue Shield	1,163,522	0.2%
III	Maryland	690	BS of Maryland	8,204,052	1.4%
III	Pennsylvania	865	Pennsylvania BS	52,961,029	8.8%
III	Virginia	10490	The Travelers	4,212,127	0.7%
III	Washington, D.C.	580	Pennsylvania Blue Shield	2,187,795	0.4%
III	West Virginia	16510	Nationwide	5,651,761	0.9%
	REGION III TOTAL			74,380,286	12.4%
IV	Alabama	510	BC/BS of Alabama	7,759,021	1.3%
IV	Florida	590	BS of Florida	25,799,072	4.3%
IV	Georgia	13110	Prudential Insurance	8,279,666	1.4%
IV	Kentucky	660	BC/BS of Kentucky	8,428,913	1.4%
IV	Mississippi	10250	The Travelers	1,895,475	0.3%
IV	North Carolina	13340	Prudential	5,819,666	1.0%
IV	South Carolina	880	BC/BS of South Carolina	2,251,076	0.4%
IV	Tennessee	5440	Equitable Life Assurance	5,157,142	0.9%
	REGION IV TOTAL			65,390,031	10.9%
V	Illinois	621	BS of Illinois	23,829,247	4.0%

Table D-1 Ambulance Allowed Charges By Carrier and Region, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Percent of Total
V	Indiana	630	Mutual Medical Insurance	14,560,981	2.4%
V	Michigan	710	BC/BS of Michigan	28,435,968	4.7%
V	Minnesota	720	BS of Minnesota	2,137,426	0.4%
V	Minnesota	10240	The Travelers	2,387,825	0.4%
V	Ohio	16360	Nationwide	36,963,093	6.1%
V	Wisconsin	951	Wisconsin Physicians Serv	8,502,214	1.4%
	REGION V TOTAL			116,816,754	19.4%
VI	Arkansas	520	Arkansas BS	4,099,753	0.7%
VI	Louisiana	528	Arkansas BC/BS	11,323,166	1.9%
VI	New Mexico	1360	Aetna Casualty and Life	1,849,931	0.3%
VI	Oklahoma	1370	Aetna Casualty and Life	8,597,949	1.4%
VI	Texas	900	Group Medical and Surgica	27,801,595	4.6%
	REGION VI TOTAL			53,672,394	8.9%
VII	Iowa	640	BS of Iowa	3,061,199	0.5%
VII	Kansas	650	Kansas BS	2,518,703	0.4%
VII	Kansas/Missouri	740	BS of Kansas City	4,630,397	0.8%
VII	Missouri	11260	General American Life	5,650,503	0.9%
VII	Nebraska	645	Iowa BC/BS Nebraska	1,559,531	0.3%
	REGION VII TOTAL			17,420,333	2.9%
VIII	Colorado	550	Colorado Medical Service	6,325,897	1.1%
VIII	Montana	751	Montana Physicians Servic	1,130,364	0.2%
VIII	North/South Dakota	820	BS of North Dakota	2,004,752	0.3%
VIII	Utah	910	BS of Utah	1,521,199	0.3%
VIII	Wyoming	5530	Equitable Life	331,449	0.1%
	REGION VIII TOTAL			11,313,661	1.9%
IX	Arizona	1030	Aetna Casualty and Life	7,996,339	1.3%
IX	California	2050	Occidental Life	40,855,604	6.8%
IX	California	547	California Physicians Ser	52,567,214	8.7%

Table D-1 Ambulance Allowed Charges By Carrier and Region, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Percent of Total
IX	Hawaii	1120	Aetna Casualty and Life	919,039	0.2%
IX	Nevada	1290	Aetna Casualty and Life	2,564,999	0.4%
	REGION IX TOTAL			104,903,195	17.4%
X	Alaska	1020	Aetna Casualty and Life	107,142	0.0%
X	Idaho	5130	Equitable Life Assurance	1,233,415	0.2%
X	Oregon	1380	Aetna Casualty and Life	6,699,818	1.1%
X	Washington	930	Washington Physicians Ser	10,573,577	1.8%
	REGION X TOTAL			18,613,952	3.1%
	Railroad	10071	The Travelers	16,362,117	2.7%
	TOTAL MEDICARE			601,742,813	100.0%

Source: Project HOPE Calculations from the 1987 BMAD Procedure File.

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
01	00700	Massachusetts	00000	CARRIER TOTAL	41,622,641	100.00
			A0010	BASE RATE, BLS, ONE WAY	30,323,131	72.85
			A0020	BLS,PER MILE, ONE WAY	9,031,815	21.70
			A0070	OXYGEN	820,630	1.99
				OTHER	1,439,065	3.46
01	00780	New Hamp./Vermont	00000	CARRIER TOTAL	2,176,890	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,484,402	68.19
			A0020	BLS,PER MILE, ONE WAY	472,189	21.69
				OTHER	220,299	10.12
01	00870	Rhode Island	00000	CARRIER TOTAL	2,014,112	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,849,232	91.81
			A0020	BLS,PER MILE, ONE WAY	63,154	3.14
			A0070	OXYGEN	47,750	2.37
				OTHER	53,976	2.68
01	10230	Connecticut	00000	CARRIER TOTAL	11,598,460	100.00
			A0010	BASE RATE, BLS, ONE WAY	9,057,982	78.10
			A0020	BLS,PER MILE, ONE WAY	1,395,292	12.03
				OTHER	1,145,186	9.87
01	21200	Maine	00000	CARRIER TOTAL	3,112,485	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,882,412	60.48
			A0020	BLS,PER MILE, ONE WAY	702,148	22.56
			A0223	ALS BASE RATE, NONINCLUSIVE	120,554	3.87
			A0070	OXYGEN	108,118	3.47
			A0221	ALS PER MILE, ONE WAY	87,751	2.82
				OTHER	211,502	6.80
02	00801	New York	00000	CARRIER TOTAL	8,426,741	100.00
			A0010	BASE RATE, BLS, ONE WAY	4,033,637	47.87
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	2,047,506	24.30
			A0222	RETURN TRIP	1,420,137	16.85
			A0020	BLS,PER MILE, ONE WAY	688,100	8.17
				OTHER	1,150,821	13.66
02	00803	New York	00000	CARRIER TOTAL	44,130,264	100.00
			W0640	BASE	11,930,268	27.03
			W0630	BASE	7,191,714	16.30
			W0540	BASE	5,813,036	13.17
			A0020	BLS,PER MILE, ONE WAY	5,218,729	11.83
			A0010	BASE RATE, BLS, ONE WAY	4,211,940	9.54
			A0222	RETURN TRIP	2,082,561	4.72
			W0560	BASE	2,038,707	4.62
			W0550	BASE	1,666,515	3.78
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	978,973	2.22
			W0570	BASE	766,699	1.74
			A0070	OXYGEN	743,395	1.68
				OTHER	1,489,727	3.38

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
02	13310	New Jersey	00000	CARRIER TOTAL	8,480,762	100.00
			A0010	BASE RATE, BLS, ONE WAY	6,368,582	75.09
			A0020	BLS,PER MILE, ONE WAY	1,944,518	22.93
				OTHER	167,662	1.98
02	14330	New York	00000	CARRIER TOTAL	974,305	100.00
			A0010	BASE RATE, BLS, ONE WAY	562,957	57.78
			W0021	OTHER	203,325	20.87
			W0540	BASE	85,127	8.74
				OTHER	122,896	12.61
03	00570	Delaware	00000	CARRIER TOTAL	1,163,522	100.00
			A0010	BASE RATE, BLS, ONE WAY	967,962	83.19
			A0020	BLS,PER MILE, ONE WAY	147,523	12.68
			A0070	OXYGEN	23,524	2.02
				OTHER	24,513	2.11
03	00580	Washington, D.C.	00000	CARRIER TOTAL	2,187,795	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,664,921	76.10
			A0020	BLS,PER MILE, ONE WAY	365,303	16.70
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	69,151	3.16
			A0223	ALS BASE RATE, NONINCLUSIVE	46,550	2.13
				OTHER	41,870	1.91
03	00690	Maryland	00000	CARRIER TOTAL	8,204,052	100.00
			A0010	BASE RATE, BLS, ONE WAY	6,489,367	79.10
			A0020	BLS,PER MILE, ONE WAY	724,680	8.83
			E0410	OXYGEN	381,167	4.65
			W8122	NIGHT	228,278	2.78
				OTHER	380,560	4.64
03	00865	Pennsylvania	00000	CARRIER TOTAL	52,961,029	100.00
			A0010	BASE RATE, BLS, ONE WAY	41,273,209	77.93
			A0020	BLS,PER MILE, ONE WAY	4,530,437	8.55
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	3,388,055	6.40
				OTHER	3,769,328	7.12
03	10490	Virginia	00000	CARRIER TOTAL	4,212,127	100.00
			A0010	BASE RATE, BLS, ONE WAY	2,678,475	63.59
			A0020	BLS,PER MILE, ONE WAY	867,165	20.59
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	369,458	8.77
			A0040	HELICOPTER	83,543	1.98
				OTHER	213,486	5.07
03	16510	West Virginia	00000	CARRIER TOTAL	5,651,761	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,246,532	22.06
			A0020	BLS,PER MILE, ONE WAY	1,149,247	20.33
			A0222	RETURN TRIP	818,173	14.48
			J5010	BASE & OXY	649,582	11.49
			A0223	ALS BASE RATE, NONINCLUSIVE	581,114	10.28
			A0230	ALS BASE RATE, ALL INCLUSIVE, ONE WAY	441,787	7.82

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
03	16510	West Virginia	A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	359,632	6.36
			A0221	ALS PER MILE, ONE WAY	164,995	2.92
				OTHER	240,699	4.26
04	00510	Alabama	00000	CARRIER TOTAL	7,759,021	100.00
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	2,242,677	28.90
			A0010	BASE RATE, BLS, ONE WAY	1,802,951	23.24
			A0020	BLS,PER MILE, ONE WAY	1,343,223	17.83
			A0223	ALS BASE RATE, NONINCLUSIVE	851,758	10.98
			A0222	RETURN TRIP	716,265	9.23
			W9892	EKG	286,049	3.69
			A0070	OXYGEN	245,814	3.17
				OTHER	230,284	2.97
04	00590	Florida	00000	CARRIER TOTAL	25,799,072	100.00
			A0010	BASE RATE, BLS, ONE WAY	14,124,041	54.75
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	5,303,887	20.56
			A0020	BLS,PER MILE, ONE WAY	3,756,313	14.56
			A0070	OXYGEN	1,048,920	4.07
			A0222	RETURN TRIP	972,861	3.77
				OTHER	593,050	2.30
04	00660	Kentucky	00000	CARRIER TOTAL	8,428,913	100.00
			A0010	BASE RATE, BLS, ONE WAY	5,392,292	63.97
			A0020	BLS,PER MILE, ONE WAY	1,813,032	21.51
			A0223	ALS BASE RATE, NONINCLUSIVE	719,859	8.54
			A0070	OXYGEN	204,780	2.43
				OTHER	298,950	3.55
04	00880	South Carolina	00000	CARRIER TOTAL	2,251,076	100.00
			A0100	NON-EMERG, TAXI, INTRA CITY	1,123,357	49.90
			A0223	ALS BASE RATE, NONINCLUSIVE	297,326	13.21
			A0020	BLS,PER MILE, ONE WAY	252,492	11.22
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	252,273	11.21
			A0070	OXYGEN	104,356	4.64
			W0903	EKG	69,496	3.09
			A0222	RETURN TRIP	54,772	2.43
			A0221	ALS PER MILE, ONE WAY	50,739	2.25
				OTHER	46,661	2.06
04	05440	Tennessee	00000	CARRIER TOTAL	5,157,142	100.00
			A0010	BASE RATE, BLS, ONE WAY	2,810,165	54.49
			A0222	RETURN TRIP	822,065	15.94
			A0223	ALS BASE RATE, NONINCLUSIVE	552,295	10.71
			A0020	BLS,PER MILE, ONE WAY	302,467	5.87
			A0070	OXYGEN	181,501	3.52
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	166,117	3.22
				OTHER	322,532	6.25
04	10250	Mississippi	00000	CARRIER TOTAL	1,895,475	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,122,361	59.21

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
05	00720	Minnesota	A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	258,298	12.08
			A0223	ALS BASE RATE, NONINCLUSIVE	251,334	11.76
			A0070	OXYGEN	71,423	3.34
				OTHER	106,965	5.00
05	00951	Wisconsin	00000	CARRIER TOTAL	8,502,214	100.00
			A0010	BASE RATE, BLS, ONE WAY	5,832,337	68.60
			A0020	BLS,PER MILE, ONE WAY	1,135,505	13.36
			A0222	RETURN TRIP	592,068	6.96
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	338,734	3.98
				OTHER	603,570	7.10
05	10240	Minnesota	00000	CARRIER TOTAL	2,387,825	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,282,354	53.70
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	507,265	21.24
			A0020	BLS,PER MILE, ONE WAY	439,831	18.42
			A0070	OXYGEN	51,408	2.15
				OTHER	106,967	4.48
05	16360	Ohio	00000	CARRIER TOTAL	36,963,093	100.00
			A0222	RETURN TRIP	8,620,800	23.32
			A0010	BASE RATE, BLS, ONE WAY	7,514,061	20.33
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	4,781,168	12.93
			A0020	BLS,PER MILE, ONE WAY	4,730,052	12.80
			A0150	NON EMERG, AMBULANCE, BASE RATE ONE WAY	3,564,110	9.64
				OTHER	7,752,902	20.97
06	00520	Arkansas	00000	CARRIER TOTAL	4,099,753	100.00
			A0010	BASE RATE, BLS, ONE WAY	2,343,582	57.16
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	873,728	21.31
			A0020	BLS,PER MILE, ONE WAY	661,101	16.13
			A0070	OXYGEN	137,027	3.34
				OTHER	84,315	2.06
06	00528	Louisiana	00000	CARRIER TOTAL	11,323,166	100.00
			A0010	BASE RATE, BLS, ONE WAY	7,227,593	63.83
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	1,741,027	15.38
			A0020	BLS,PER MILE, ONE WAY	1,460,688	12.90
			A0070	OXYGEN	478,325	4.22
				OTHER	415,533	3.67
06	00900	Texas	00000	CARRIER TOTAL	27,801,595	100.00
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	7,122,249	25.62
			A0010	BASE RATE, BLS, ONE WAY	5,315,304	19.12
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	4,263,460	15.34
			A0020	BLS,PER MILE, ONE WAY	3,345,604	12.03
			A0223	ALS BASE RATE, NONINCLUSIVE	1,770,594	6.37
			A0222	RETURN TRIP	1,585,513	5.70
			T6002	BASE	1,299,165	4.67
			A0070	OXYGEN	860,069	3.09
			A0...	ALS, PER MILE, ONE WAY	647,243	2.33

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
			Y8060	EKG	380,451	1.37
06	00900	Texas	Y6102	NIGHT	345,606	1.24
				OTHER	866,557	3.12
06	01360	New Mexico	00000	CARRIER TOTAL	1,849,931	100.00
			A0010	BASE RATE, BLS, ONE WAY	802,528	43.38
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	590,810	31.94
			A0020	BLS,PER MILE, ONE WAY	360,265	19.47
				OTHER	96,328	5.21
06	01370	Oklahoma	00000	CARRIER TOTAL	8,597,949	100.00
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	3,187,725	37.08
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	1,877,793	21.84
			A0010	BASE RATE, BLS, ONE WAY	1,760,999	20.48
			A0020	BLS,PER MILE, ONE WAY	936,826	10.90
			W7011	BASE	393,331	4.57
				OTHER	441,275	5.13
07	00640	Iowa	00000	CARRIER TOTAL	3,061,199	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,770,768	57.85
			A0020	BLS,PER MILE, ONE WAY	665,044	21.72
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	439,361	14.35
			A0070	OXYGEN	126,712	4.14
				OTHER	4,489	0.15
07	00645	Nebraska	00000	CARRIER TOTAL	1,559,531	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,048,183	67.21
			A0020	BLS,PER MILE, ONE WAY	285,186	18.29
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	161,091	10.33
			A0070	OXYGEN	54,142	3.47
				OTHER	10,929	0.70
07	00650	Kansas	00000	CARRIER TOTAL	2,518,703	100.00
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	661,008	26.24
			A0010	BASE RATE, BLS, ONE WAY	478,622	19.00
			A0223	ALS BASE RATE, NONINCLUSIVE	465,869	18.50
			A0020	BLS,PER MILE, ONE WAY	365,741	14.52
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	239,128	9.49
			A0222	RETURN TRIP	89,947	3.57
			A0221	ALS PER MILE, ONE WAY	73,951	2.94
			A0070	OXYGEN	59,875	2.38
			Y0100	EKG	53,437	2.12
				OTHER	31,125	1.24
07	00740	Kansas/Missouri	00000	CARRIER TOTAL	4,630,397	100.00
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	1,354,927	29.26
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	1,342,552	28.99
			A0010	BASE RATE, BLS, ONE WAY	581,812	12.57
			A0223	ALS BASE RATE, NONINCLUSIVE	454,081	9.81
			A0020	BLS PER MILE, ONE WAY	396,909	8.57
			A0221	ALS PER MILE, ONE WAY	174,420	3.77

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
07	00740	Kansas/Missouri	Y0001	SUPPLIES	119,021	2.57
			A0070	OXYGEN	107,741	2.33
			Y0003	EKG	89,531	1.93
				OTHER	59,583	1.29
07	11260	Missouri	00000	CARRIER TOTAL	5,650,503	100.00
			A0010	BASE RATE, BLS, ONE WAY	3,592,820	63.58
			A0020	BLS,PER MILE, ONE WAY	676,408	11.97
			A0223	ALS BASE RATE, NONINCLUSIVE	494,087	8.74
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	249,808	4.42
			A0070	OXYGEN	213,125	3.77
			93005	EKG	174,630	3.09
				OTHER	249,625	4.42
08	00550	Colorado	00000	CARRIER TOTAL	6,325,897	100.00
			A0010	BASE RATE,BLS, ONE WAY	2,243,123	35.46
			A0223	ALS BASE RATE, NONINCLUSIVE	2,141,316	33.85
			A0020	RLS,PER MILE, ONE WAY	721,650	11.41
			A0221	ALS PER MILE, ONE WAY	361,872	5.72
			A0070	OXYGEN	331,706	5.24
			Y1015	BASE	254,571	4.02
			A0215	MISCELLANEOUS DISPOSABLE SUPPLIES	236,519	3.71
				OTHER	37,140	0.59
08	00751	Montana	00000	CARRIER TOTAL	1,130,364	100.00
			A0010	BASE RATE, BLS, ONE WAY	735,005	65.02
			A0020	RLS,PER MILE, ONE WAY	217,567	19.25
			A0030	AIR, ONE WAY	56,780	5.02
			A0070	OXYGEN	47,339	4.19
				OTHER	73,673	6.52
08	00820	North/South Dakot	00000	CARRIER TOTAL	2,004,752	100.00
			A0010	BASE RATE, BLS, ONE WAY	846,405	42.22
			A0223	ALS BASE RATE, NONINCLUSIVE	498,403	24.86
			A0020	RLS,PER MILE, ONE WAY	445,598	22.23
			A0070	OXYGEN	75,471	3.76
				OTHER	138,875	6.93
08	00910	Utah	00000	CARRIER TOTAL	1,521,199	100.00
			A0010	BASE RATE, BLS, ONE WAY	926,590	60.91
			A0020	RLS,PER MILE, ONE WAY	430,067	28.80
			A0070	OXYGEN	44,149	2.90
			A0223	ALS BASE RATE, NONINCLUSIVE	40,037	2.63
				OTHER	72,356	4.76
08	05530	Wyoming	00000	CARRIER TOTAL	331,449	100.00
			A0010	BASE RATE, BLS, ONE WAY	143,850	43.40
			A0020	BLS,PER MILE, ONE WAY	90,888	27.42
			A0030	AIR, ONE WAY	25,145	7.59
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	22,744	6.86
			A0070	OXYGEN	17,154	5.18

able D-2. Procedure Code Reimbursement by Carrier

EGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
				OTHER	31,668	9.55
9	00542	California	00000	CARRIER TOTAL	52,567,214	100.00
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	19,282,882	36.68
			A0010	BASE RATE, BLS, ONE WAY	12,766,738	24.29
			A0020	BLS,PER MILE, ONE WAY	6,147,882	11.70
			Y0001	BASE	5,977,120	11.37
			A0221	ALS PER MILE, ONE WAY	2,531,381	4.82
			A0070	OXYGEN	2,143,624	4.08
			Y0002	NIGHT	1,424,557	2.71
				OTHER	2,293,030	4.36
9	01030	Arizona	00000	CARRIER TOTAL	7,996,339	100.00
			A0010	BASE RATE, BLS, ONE WAY	3,735,784	46.72
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	2,284,579	28.57
			A0020	BLS,PER MILE, ONE WAY	1,677,896	20.98
				OTHER	298,080	3.73
9	01120	Hawaii	00000	CARRIER TOTAL	919,039	100.00
			A0010	BASE RATE, BLS, ONE WAY	570,692	62.10
			A0030	AIR, ONE WAY	158,649	17.26
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	123,135	13.40
				OTHER	66,565	7.24
9	01V90	Nevada	00000	CARRIER TOTAL	2,564,999	100.00
			A0010	BASE RATE, BLS, ONE WAY	1,216,512	47.43
			A0020	ALS,PER MILE, ONE WAY	450,945	17.58
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	443,676	17.30
			R0590	EKG	82,701	3.22
			A0070	OXYGEN	74,517	2.91
				OTHER	296,648	11.57
9	02050	California	00000	CARRIER TOTAL	40,855,604	100.00
			Y0001	BASE	15,688,527	38.40
			A0010	BASE RATE, BLS, ONE WAY	7,300,259	17.87
			A0020	BLS,PER MILE, ONE WAY	7,182,040	17.58
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	4,180,402	10.23
			A0222	RETURN TRIP	2,367,819	5.80
			A0070	OXYGEN	1,380,388	3.38
			Y0002	NIGHT	958,522	2.35
				OTHER	1,797,647	4.40
9	00930	Washington	00000	CARRIER TOTAL	10,573,577	100.00
			A0010	BASE RATE, BLS, ONE WAY	5,342,234	50.52
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	2,203,074	20.84
			A0020	BLS,PER MILE, ONE WAY	1,557,510	14.73
			A0221	ALS PER MILE, ONE WAY	449,327	4.25
			A0222	RETURN TRIP	341,111	3.23
			A0070	OXYGEN	212,517	2.01
				OTHER	467,804	4.42

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
10	01020	Alaska	00000	CARRIER TOTAL	107,142	100.00
			A0010	BASE RATE, BLS, ONE WAY	65,255	60.91
			A0223	ALS BASE RATE, NONINCLUSIVE	17,279	16.13
			A0999	UNLISTED AMBULANCE SERVICE	6,210	5.80
			A0020	BLS,PER MILE, ONE WAY	6,139	5.73
			Y0003	AIR	6,107	5.70
			A0070	OXYGEN	3,170	2.96
				OTHER	2,982	2.78
10	01380	Oregon	00000	CARRIER TOTAL	6,699,818	100.00
			A0010	BASE RATE, BLS, ONE WAY	2,141,322	31.96
			A0223	ALS BASE RATE, NONINCLUSIVE	1,868,011	27.88
			A0020	BLS,PER MILE, ONE WAY	787,048	11.75
			A0221	ALS PER MILE, ONE WAY	447,639	6.68
			A0070	OXYGEN	348,775	5.21
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	308,901	4.61
			Y0170	NIGHT	254,993	3.81
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	131,550	1.96
				OTHER	411,579	6.14
10	05130	Idaho	00000	CARRIER TOTAL	1,233,415	100.00
			A0010	BASE RATE, BLS, ONE WAY	638,838	51.79
			A0223	ALS BASE RATE, NONINCLUSIVE	374,565	30.37
			A0020	BLS,PER MILE, ONE WAY	175,555	14.23
				OTHER	44,457	3.60
11	10071	Railroad	00000	CARRIER TOTAL	16,362,117	100.00
			A0010	BASE RATE, BLS, ONE WAY	7,010,491	42.85
			A0150	NON-EMERG, AMBULANCE, BASE RATE ONE WAY	3,109,059	19.00
			A0020	BLS,PER MILE, ONE WAY	2,185,070	13.35
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	2,146,111	13.12
			A0223	ALS BASE RATE, NONINCLUSIVE	513,915	3.14
			A0070	OXYGEN	423,113	2.59
			A0070	OTHER	974,358	5.95
Total Medicare					$601,409,413	

Source: Project HOPE Calculations from 1987 BMAD Procedure File.
Note: Excludes Puerto Rico/Virgin Islands data.

Table D-3. Average Allowed Charges for Selected Ambulance Codes, 1987

Region	State	Carrier Number	BLS Base Rate A0010	BLS Per Mile A0020	ALS Base Rate Inclusive A0220	ALS Base Rate Non-inclusive A0223	ALS Per Mile A0221
I	Connecticut	10230	96.81	3.06	133.47	185.27	*
I	Maine	21200	68.16	2.24	70.28	95.38	2.47
I	Massachusetts	780	116.01	5.49	178.43	121.19	5.88
I	New Hampshire/Vermont	780	58.58	2.18	101.53	87.53	2.57
I	Rhode Island	870	83.93	1.91	93.55	---	2.00
II	New Jersey	13310	63.93	2.33	---		---
II	New York	14330	129.89	---	*		---
II	New York	801	74.53	2.02	150.90	---	1.91
II	New York	803	105.58	2.80	179.23	---	---
III	Delaware	570	69.37	2.04	156.12	*	*
III	Maryland	690	85.92	1.87	---	---	---
III	Pennsylvania	865	87.66	1.68	133.58	198.83	2.25
III	Virginia	10490	55.44	1.82	103.49	43.01	2.01
III	Washington, D.C.	580	57.93	2.45	61.86	50.00	*
III	West Virginia	16510	54.68	1.75	153.99	109.93	1.87
IV	Alabama	510	60.29	1.36	---	69.61	1.43
IV	Florida	590	69.21	2.69	120.30	---	2.55
IV	Georgia	13110	54.25	1.81	---	62.57	---
IV	Kentucky	660	53.01	1.59	---	79.33	1.69
IV	Mississippi	10250	51.83	1.20	89.14	85.62	1.40
IV	North Carolina	13340	45.55	1.28	61.44	46.42	1.20
IV	South Carolina	880	*	1.62	56.59	57.62	1.74
IV	Tennessee	5440	51.89	1.22	98.70	75.43	1.37
V	Illinois	621	67.64	2.55	107.89	---	---
V	Indiana	630	65.22	2.35	132.44	131.44	2.64
V	Michigan	710	88.08	1.93	173.13	---	2.03
V	Minnesota	720	77.59	2.05	247.89	240.97	---
V	Minnesota	10240	68.29	2.14	189.28	*	2.85
V	Ohio	16360	76.17	2.35	253.94	81.18	2.58
V	Wisconsin	951	82.51	1.98	161.15	197.88	2.59
VI	Arkansas	520	60.51	1.32	182.71	65.13	1.49

Table D-3. Average Allowed Charges for Selected Ambulance Codes, 1987

Region	State	Carrier Number	BLS Base Rate A0010	BLS Per Mile A0020	ALS Base Rate Inclusive A0220	ALS Base Rate Non-inclusive A0223	ALS Per Mile A0221
VI	Louisiana	528	93.30	2.57	196.26	115.49	2.57
VI	New Mexico	1360	65.51	1.94	198.93	___	___
VI	Oklahoma	1370	93.58	2.03	284.85	___	2.18
VI	Texas	900	73.64	2.18	112.83	76.78	2.04
VII	Iowa	640	53.59	1.60	93.16	___	___
VII	Kansas	650	55.51	1.55	116.08	70.85	___
VII	Kansas/Missouri	740	63.94	2.12	276.89	177.38	3.19
VII	Missouri	11260	62.98	1.24	85.55	60.83	1.18
VII	Nebraska	645	56.20	2.69	124.49	___	___
VIII	Colorado	550	102.51	3.62	*	174.24	4.36
VIII	Montana	751	82.00	1.79	152.00	122.35	3.96
VIII	North/South Dakota	820	56.56	1.21	___	136.51	1.99
VIII	Utah	910	81.08	4.07	*	153.40	5.10
VIII	Wyoming	5530	58.38	1.87	131.47	41.60	3.26
IX	Arizona	1030	103.13	4.25	168.94	___	4.60
IX	California	2050	105.77	5.12	175.88	___	5.41
IX	California	542	127.90	5.40	261.51	___	5.65
IX	Hawaii	1120	125.43	4.58	134.87	___	4.58
IX	Nevada	1290	116.98	4.22	281.34	___	*
X	Alaska	1020	48.34	1.31	___	140.48	*
X	Idaho	5130	86.26	2.06	*	156.79	2.50
X	Oregon	1380	114.94	3.44	194.89	168.78	4.57
X	Washington	930	113.00	4.24	188.65	___	4.41
	Railroad	10071	83.04	2.55	150.32	139.92	3.54
	Total Medicare		80.53	2.51	158.95	116.00	2.78

Source: Project HOPE Calculations from the 1987 BMAD Procedure file.

--- No claims for this code were reimbursed

* Data have not been presented as the number of claims submitted was less than 30 factors of + three standard deviations from the mean have been removed

Table D-4. Local Code Use By Carrier, 1987

Region	State	Carrier Number	Carrier Name	Local Code Allowed Charges	Total Allowed Charges	Carrier's Percent Local	Carrier as a Percent of Total Local Codes
I	Connecticut	10230	The Travelers	1,074,530	11,598,460	9.3%	1.5%
I	Maine	21200	BS of Mass/Maine	116,790	3,112,485	3.8%	0.2%
I	Massachusetts	700	BS of Massachusetts	486,859	41,622,641	1.2%	0.7%
I	New Hampshire/Vermont	700	Massachusetts BC/BS	38,411	2,176,890	1.8%	0.1%
I	Rhode Island	870	BS of Rhode Island	0	2,014,112	0.0%	0.0%
	REGION I TOTAL			1,716,590	60,524,588	2.8%	2.4%
II	New Jersey	13310	Prudential	0	8,480,762	0.0%	0.0%
II	New York	14330	Group Health	320,380	974,305	32.9%	0.4%
II	New York	801	BS of Western New York	65	8,426,741	0.0%	0.0%
II	New York	803	Empire BC/BS	30,616,039	44,130,264	69.4%	42.2%
	REGION II TOTAL			30,936,484	62,012,072	49.9%	42.6%
III	Delaware	570	Pennsylvania Blue Shield	12,559	1,163,522	1.1%	0.0%
III	Maryland	690	BS of Maryland	349,502	8,204,052	4.3%	0.5%
III	Pennsylvania	865	Pennsylvania BS	1,154,462	52,961,029	2.2%	1.6%
III	Virginia	10490	The Travelers	24,255	4,212,127	0.6%	0.0%
III	Washington, D.C.	580	Pennsylvania Blue Shield	13,771	2,187,795	0.6%	0.0%
III	West Virginia	16510	Nationwide	649,582	5,651,761	11.5%	0.9%
	REGION III TOTAL			2,204,131	74,380,286	3.0%	3.0%
IV	Alabama	510	BC/BS of Alabama	289,312	7,759,021	3.7%	0.4%
IV	Florida	590	BS of Florida	0	25,799,072	0.0%	0.0%
IV	Georgia	13110	Prudential Insurance	187,077	8,279,666	2.3%	0.3%
IV	Kentucky	660	BC/BS of Kentucky	188,872	8,428,913	2.2%	0.3%
IV	Mississippi	10250	The Travelers	46,908	1,895,475	2.5%	0.1%
IV	North Carolina	13340	Prudential	390,298	5,819,666	6.7%	0.5%
IV	South Carolina	880	BC/BS of South Carolina	108,158	2,251,076	4.8%	0.1%
IV	Tennessee	5440	Equitable Life Assurance	211,194	5,157,142	4.1%	0.3%
	REGION IV TOTAL			1,421,819	65,390,031	2.2%	2.0%
V	Illinois	671	BS of Illinois	1,062,414	23,829,247	4.5%	1.5%
V	Indiana	610	Mutual Medical Insurance	1,108,852	14,560,981	9.0%	1.8%

Table D-4. Local Code Use By Carrier, 1987

Region	State	Carrier Number	Carrier Name	Local Code Allowed Charges	Total Allowed Charges	Carrier's Percent Local	Carrier as a Percent of Total Local Codes
V	Michigan	710	BC/BS of Michigan	134,202	28,435,968	0.5%	0.2%
V	Minnesota	720	BS of Minnesota	93,764	2,137,426	4.4%	0.1%
V	Minnesota	16360	The Travelers	53,176	2,387,825	2.2%	0.1%
V	Ohio	16360	Nationwide	3,267,137	36,963,093	8.8%	4.5%
V	Wisconsin	951	Wisconsin Physicians Serv	4,296	8,502,214	0.1%	0.0%
	REGION V TOTAL			5,923,841	116,816,754	5.1%	8.2%
VI	Arkansas	520	Arkansas BS	17,199	4,099,753	0.4%	0.0%
VI	Louisiana	528	Arkansas BC/BS	34,734	11,323,166	0.3%	0.0%
VI	New Mexico	1360	Aetna Casualty and Life	68	1,849,931	0.0%	0.0%
VI	Oklahoma	1370	Aetna Casualty and Life	396,960	8,597,949	4.6%	0.5%
VI	Texas	900	Group Medical and Surgica	2,649,189	27,801,595	9.5%	3.7%
	REGION VI TOTAL			3,098,150	53,672,394	5.8%	4.3%
VII	Iowa	640	BS of Iowa	521	3,061,199	0.0%	0.0%
VII	Kansas	650	Kansas BS	80,327	2,518,703	3.2%	0.1%
VII	Kansas/Missouri	740	BS of Kansas City	238,693	4,630,397	5.2%	0.3%
VII	Missouri	11260	General American Life	82,575	5,650,503	1.5%	0.1%
VII	Nebraska	645	Iowa BC/BS Nebraska	233	1,559,531	0.0%	0.0%
	REGION VII TOTAL			402,349	17,420,333	2.3%	0.6%
VIII	Colorado	550	Colorado Medical Service	254,571	6,325,897	4.0%	0.4%
VIII	Montana	751	Montana Physicians Servic	2,041	1,130,364	0.2%	0.0%
VIII	North/South Dakota	820	BS of North Dakota	72,596	2,004,752	3.6%	0.1%
VIII	Utah	910	BS of Utah	14,829	1,521,199	1.0%	0.0%
VIII	Wyoming	5530	Equitable Life	0	331,449	0.0%	0.0%
	REGION VIII TOTAL			344,037	11,313,661	3.0%	0.5%
IX	Arizona	1030	Aetna Casualty and Life	845	7,996,339	0.0%	0.0%
IX	California	2050	Occidental Life	17,867,055	40,855,604	43.7%	24.6%
IX	California	542	California Physicians Ser	7,694,334	52,567,214	14.6%	10.6%
IX	Hawaii	1120	Aetna Casualty and Life	0	919,039	0.0%	0.0%

Table D-4. Local Code Use By Carrier, 1987

Region	State	Carrier Number	Carrier Name	Local Code Allowed Charges	Total Allowed Charges	Carrier's Percent Local	Carrier as a Percent of Total Local Codes
IX	Nevada	1290	Aetna Casualty and Life	127,735	2,564,999	5.0%	0.2%
	REGION IX TOTAL			25,689,969	104,903,195	24.5%	35.4%
X	Alaska	1020	Aetna Casualty and Life	7,080	107,142	6.6%	0.0%
X	Idaho	5130	Equitable Life Assurance	0	1,233,415	0.0%	0.0%
X	Oregon	1380	Aetna Casualty and Life	512,325	6,699,818	7.6%	0.7%
X	Washington	930	Washington Physicians Ser	285,920	10,573,577	2.7%	0.4%
	REGION X TOTAL			805,325	18,613,952	4.3%	1.1%
	Railroad	10071	The Travelers	8,197	16,362,117	0.1%	0.0%
	TOTAL MEDICARE			72,550,892	601,409,383	12.1%	100.0%

Source: Project HOPE Calculations from the 1987 BMAD Procedure File

Table D-5. Allowed Charges for Nonambulance Codes by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
I	Connecticut	10230	The Travelers	648,757	11.7%
I	Maine	21200	BS of Maes/Maine	116,838	2.1%
I	Massachusetts	700	BS of Massachusetts	8,247	0.1%
I	New Hampshire/Vermont	700	Massachusetts BC/BS	39,096	0.7%
I	Rhode Island	870	BS of Rhode Island	126	0.0%
	REGION I TOTAL			813,064	14.6%
II	New Jersey	13310	Prudential	1,347	0.0%
II	New York	14330	Group Health	99,365	1.8%
II	New York	801	BS of Western New York	11,992	0.2%
II	New York	803	Empire BC/BS	85,960	1.5%
	REGION II TOTAL			198,664	3.6%
III	Delaware	570	Pennsylvania Blue Shield	1,425	0.0%
III	Maryland	690	BS of Maryland	52,040	0.9%
III	Pennsylvania	865	Pennsylvania BS	54,506	1.0%
III	Virginia	10490	The Travelers	5,473	0.1%
III	Washington, D.C.	580	Pennsylvania Blue Shield	3,271	0.1%
III	West Virginia	16510	Nationwide	15,043	0.3%
	REGION III TOTAL			131,758	2.4%
IV	Alabama	510	BC/BS of Alabama	4,291	0.1%
IV	Florida	590	BS of Florida	16	0.0%
IV	Georgia	13110	Prudential Insurance	703	0.0%
IV	Kentucky	660	BC/BS of Kentucky	175,905	3.2%
IV	Mississippi	10250	The Travelers	209	0.0%
IV	North Carolina	13340	Prudential	1,700	0.0%
IV	South Carolina	880	BC/BS of South Carolina	51	0.0%
IV	Tennessee	5440	Equitable Life Assurance	211,132	3.8%
	REGION IV TOTAL			394,007	7.1%
•	[illegible]	671	BS of Illinois	174,550	3.1%
•	[illegible]	630	Mutual Medical Insurance	43,851	0.8%

Table D-5. Allowed Charges for Nonambulance Codes by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
V	Michigan	710	BC/BS of Michigan	230	0.0%
V	Minnesota	720	BS of Minnesota	303	0.0%
V	Minnesota	16040	The Travelers	2,108	0.0%
V	Ohio	14360	Nationwide	3,362,799	60.6%
V	Wisconsin	951	Wisconsin Physicians Serv	703	0.0%
	REGION V TOTAL			3,584,544	64.6%
VI	Arkansas	520	Arkansas BS	30	0.0%
VI	Louisiana	528	Arkansas BC/BS	376	0.0%
VI	New Mexico	1360	Aetna Casualty and Life	302	0.0%
VI	Oklahoma	1370	Aetna Casualty and Life	499	0.0%
VI	Texas	900	Group Medical and Surgica	123,408	2.2%
	REGION VI TOTAL			124,615	2.2%
VII	Iowa	640	BS of Iowa	4,485	0.1%
VII	Kansas	650	Kansas BS	228	0.0%
VII	Kansas/Missouri	740	BS of Kansas City	0	0.0%
VII	Missouri	11260	General American Life	390	0.0%
VII	Nebraska	645	Iowa BC/BS Nebraska	1,157	0.0%
	REGION VII TOTAL			6,260	0.1%
VIII	Colorado	550	Colorado Medical Service	36	0.0%
VIII	Montana	751	Montana Physicians Servic	3,622	0.1%
VIII	North/South Dakota	820	BS of North Dakota	2,389	0.0%
VIII	Utah	910	BS of Utah	8,913	0.2%
VIII	Wyoming	5530	Equitable Life	0	0.0%
	REGION VIII TOTAL			14,960	0.3%
IX	Arizona	1030	Aetna Casualty and Life	21	0.0%
IX	California	2070	Occidental Life	0	0.0%
IX	California	942	California Physicians Ser	1,925	0.0%
IX	Hawaii	1170	Aetna Casualty and Life	0	0.0%

Table 0-5. Allowed Charges for Nonambulance Codes by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
IX	Nevada	1290	Aetna Casualty and Life	168,800	3.0%
	REGION IX TOTAL			170,746	3.1%
X	Alaska	1020	Aetna Casualty and Life	53	0.0%
X	Idaho	5130	Equitable Life Assurance	0	0.0%
X	Oregon	1380	Aetna Casualty and Life	46,923	0.8%
X	Washington	930	Washington Physicians Ser	2,727	0.0%
	REGION X TOTAL			49,703	0.9%
	Railroad	10071	The Travelers	64,079	1.2%
	TOTAL MEDICARE			5,552,400	100.0%

Source: Project HOPE Calculations from the 1987 BMAD Procedure File

Table D-6: Ambulance Related Charges for Providers Other than Specialty 59 by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
I	Connecticut	10230	The Travelers	50,405	1.0%
I	Maine	21200	BS of Mass/Maine	75	0.0%
I	Massachusetts	700	BS of Massachusetts	5,356	0.1%
I	New Hampshire/Vermont	700	Massachusetts BC/BS	22,934	0.4%
I	Rhode Island	870	BS of Rhode Island	367	0.0%
	REGION I TOTAL			79,137	1.5%
II	New Jersey	13310	Prudential	5,451	0.1%
II	New York	14330	Group Health	979	0.0%
II	New York	801	BS of Western New York	10,140	0.2%
II	New York	803	Empire BC/BS	5,629	0.1%
	REGION II TOTAL			22,199	0.4%
III	Delaware	570	Pennsylvania Blue Shield	340	0.0%
III	Maryland	690	BS of Maryland	197,868	3.7%
III	Pennsylvania	865	Pennsylvania BS	64,772	1.2%
III	Virginia	10490	The Travelers	659,081	12.4%
III	Washington, D.C.	580	Pennsylvania Blue Shield	3,983	0.1%
III	West Virginia	16510	Nationwide	371	0.0%
	REGION III TOTAL			926,415	17.5%
IV	Alabama	510	BC/BS of Alabama	1,843	0.0%
IV	Florida	590	BS of Florida	325	0.0%
IV	Georgia	13110	Prudential Insurance	10,864	0.2%
IV	Kentucky	660	BC/BS of Kentucky	14,411	0.3%
IV	Mississippi	10250	The Travelers	34,612	0.7%
IV	North Caroline	13340	Prudential	5,469	0.1%
IV	South Caroline	880	BC/BS of South Caroline	2,376	0.0%
IV	Tennessee	5440	Equitable Life Assurance	2,949	0.1%
	REGION IV TOTAL			72,849	1.4%
V	Illinois	621	BS of Illinois	90,644	1.7%

Table B-6. Ambulance Related Charges for Providers Other than Specialty 59 by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
V	Indiana	630	Mutual Medical Insurance	37,945	0.7%
V	Michigan	710	BC/BS of Michigan	27,351	0.5%
V	Minnesota	720	BS of Minnesota	1,009	0.0%
V	Minnesota	10240	The Travelers	561	0.0%
V	Ohio	16360	Nationwide	1,780	0.0%
V	Wisconsin	951	Wisconsin Physicians Serv	4,822	0.1%
	REGION V TOTAL			164,112	3.1%
VI	Arkansas	520	Arkansas BS	0	0.0%
VI	Louisiana	528	Arkansas BC/BS	81	0.0%
VI	New Mexico	1360	Aetna Casualty and Life	779	0.0%
VI	Oklahoma	1370	Aetna Casualty and Life	4,740	0.1%
VI	Texas	900	Group Medical and Surgica	91,991	1.7%
	REGION VI TOTAL			97,591	1.8%
VII	Iowa	640	BS of Iowa	7,402	0.1%
VII	Kansas	650	Kansas BS	1,363	0.0%
VII	Kansas/Missouri	740	BS of Kansas City	12,399	0.2%
VII	Missouri	11260	General American Life	14,049	0.3%
VII	Nebraska	645	Iowa BC/BS Nebraska	3,332	0.1%
	REGION VII TOTAL			38,545	0.7%
VIII	Colorado	550	Colorado Medical Service	4,396	0.1%
VIII	Montana	751	Montana Physicians Servic	3,978	0.1%
VIII	North/South Dakota	820	BS of North Dakota	34,902	0.7%
VIII	Utah	910	BS of Utah	289	0.0%
VIII	Wyoming	5530	Equitable Life	0	0.0%
	REGION VIII TOTAL			43,565	0.8%
IX	Arizona	1010	Aetna Casualty and Life	2,606	0.0%
IX	California	2050	Occidental Life	0	0.0%
IX	California	542	California Physicians Ser	13,929	0.3%

Table B-6. Ambulance Related Charges for Providers Other than Specialty 59 by Carrier, 1987

Region	State	Carrier Number	Carrier Name	Allowed Charges	Carrier as a Percent of Total
IX	Hawaii	1120	Aetna Casualty and Life	3,186	0.1%
IX	Nevada	1290	Aetna Casualty and Life	241	0.0%
	REGION IX TOTAL			19,962	0.4%
X	Alaska	1020	Aetna Casualty and Life	1,624	0.0%
X	Idaho	5130	Equitable Life Assurance	926	0.0%
X	Oregon	1380	Aetna Casualty and Life	2,692,532	50.8%
X	Washington	930	Washington Physicians Ser	990,544	18.7%
	REGION X TOTAL			3,685,626	69.5%
	Railroad	10071	The Travelers	76,505	1.4%
	TOTAL MEDICARE			5,301,371	100.0%

Source: Project HOPE Calculations from the 1987 BMAD Procedure File

Table B-7. Average Allowed Charge by Level of Service, By Carrier, and Region, 1987

Region	State	Carrier Number	Carrier Name	Advanced Life Support	Number of Runs	CV	Basic Life Support	Number of Runs	CV	ALS Runs as a Percent of Total
I	Connecticut	10230	The Travelers	*	80	*	$136	54,080	36	0.1%
I	Maine	21280	BS of Maine/Maine	$199	1,660	78	$113	22,680	62	6.8%
I	Massachusetts	700	BS of Massachusetts	$259	4,840	29	$109	189,900	62	2.5%
I	New Hampshire/Vermont	700	Massachusetts BC/BS	$160	480	39	$93	21,080	52	2.2%
I	Rhode Island	870	BS of Rhode Island	*	420	*	$130	12,040	67	3.4%
	REGION I TOTAL			$238	7,480	---	$165	299,780	---	2.4%
II	New Jersey	13310	Prudential	---	---	---	$103	69,800	47	---
II	New York	14330	Group Health	---	---	---	$141	3,840	26	---
II	New York	801	BS of Western New York	$180	11,960	47	$102	45,900	65	20.7%
II	New York	803	Empire BC/BS	$189	5,620	11	$140	28,820	45	16.3%
	REGION II TOTAL			$183	17,580	---	$111	148,360	---	10.6%
III	Delaware	570	Pennsylvania Blue Shield	*	60	*	$88	5,820	52	1.0%
III	Maryland	690	BS of Maryland	---	---	55	$113	58,260	29	---
III	Pennsylvania	865	Pennsylvania BS	$196	23,460	33	$136	269,520	122	8.0%
III	Virginia	10490	The Travelers	$128	3,620	54	$93	31,460	73	10.3%
III	Washington, D.C.	580	Pennsylvania Blue Shield	$60	2,060	30	$80	25,020	57	7.6%
III	West Virginia	16510	Nationwide	$141	6,560	33	$56	27,240	65	19.4%
	REGION III TOTAL			$171	35,760	---	$121	417,320	---	7.9%
IV	Alabama	510	BC/BS of Alabama	$122	10,760	32	$79	50,260	44	17.6%
IV	Florida	590	BS of Florida	$148	39,280	35	$89	162,760	30	19.4%
IV	Georgia	13110	Prudential Insurance	$114	5,900	35	$75	59,160	47	9.1%
IV	Kentucky	660	BC/BS of Kentucky	$103	7,800	31	$88	78,500	60	9.0%
IV	Mississippi	10250	The Travelers	$118	2,840	19	$71	18,340	51	13.4%
IV	North Carolina	13340	Prudential	$72	13,040	41	$66	43,640	91	23.0%
IV	South Carolina	880	BC/BS of South Carolina	$88	7,600	33	*	20	*	
IV	Tennessee	5440	Equitable Life Assurance	$111	8,120	34	$73	56,500	52	12.6%
	REGION IV TOTAL			$120	95,348	---	$81	469,180		16.9%
*	Illinois	671	BS of Illinois	$150	28,820	29	$87	137,680	55	17.3%
*	Indiana	630	Mutual Medical Insurance	$109	15,160	52	$69	74,180	44	16.9%

Table D-7. Average Allowed Charge by Level of Service, By Carrier, and Region, 1987

Region	State	Carrier Number	Carrier Name	Advanced Life Support	Number of Runs	CV	Basic Life Support	Number of Runs	CV	ALS Runs as a Percent of Total
V	Michigan	710	BC/BS of Michigan	$192	27,400	23	$105	140,060	36	16.4%
V	Minnesota	720	BS of Minnesota	$309	1,820	23	$120	10,820	52	14.4%
V	Minnesota	98360	The Travelers	$244	2,100	29	$125	19,700	35	9.6%
V	Ohio	14360	Nationwide	$275	28,900	43	$102	135,400	53	17.6%
V	Wisconsin	951	Wisconsin Physicians Serv	$253	1,940	32	$108	60,200	38	3.1%
	REGION V TOTAL			$208	106,220	---	$98	578,320	---	15.5%
VI	Arkansas	520	Arkansas BS	$188	4,620	35	$97	28,540	60	13.9%
VI	Louisiana	528	Arkansas BC/BS	$239	8,840	17	$146	53,180	135	14.3%
VI	New Mexico	1360	Aetna Casualty and Life	$235	2,780	19	$95	8,140	58	25.5%
VI	Oklahoma	1370	Aetna Casualty and Life	$344	10,200	37	$118	32,200	91	24.1%
VI	Texas	900	Group Medical and Surgica	$136	51,080	43	$107	135,540	47	27.4%
	REGION VI TOTAL			$182	77,520	---	$115	257,600	---	23.1%
VII	Iowa	640	BS of Iowa	$136	3,960	36	$83	25,800	43	13.3%
VII	Kansas	650	Kansas BS	$108	8,100	35	$83	20,240	56	28.6%
VII	Kansas/Missouri	740	BS of Kansas City	$288	6,080	24	$111	19,100	51	24.1%
VII	Missouri	11260	General American Life	$117	9,680	41	$84	41,900	50	18.8%
VII	Nebraska	645	Iowa BC/BS Nebraska	$165	840	39	$80	13,600	53	5.8%
	REGION VII TOTAL			$155	28,660	---	$88	120,640	---	19.2%
VIII	Colorado	550	Colorado Medical Service	$238	11,100	22	$147	16,660	44	40.0%
VIII	Montana	751	Montana Physicians Servic	*	40	*	$126	6,780	64	0.6%
VIII	North/South Dakota	820	BS of North Dakota	$173	3,080	41	$89	13,020	52	19.1%
VIII	Utah	910	BS of Utah	*	160	*	$132	8,860	77	1.8%
VIII	Wyoming	5530	Equitable Life	*	380	*	$116	1,960	92	16.2%
	REGION VIII TOTAL			$224	14,760	---	$124	47,260	---	23.8%
IX	Arizona	1030	Aetna Casualty and Life	$213	11,760	31	$139	31,120	46	27.4%
IX	California	2050	Occidental Life	$234	22,820	32	$142	59,260	29	27.1%
IX	California	542	California Physicians Ser	$179	68,680	19	$179	85,800	39	44.5%
IX	Hawaii	1170	Aetna Casualty and Life	$189	620	26	$142	3,380	51	15.5%

Table D-7. Average Allowed Charge by Level of Service, By Carrier, and Region, 1987

Region	State	Carrier Number	Carrier Name	Advanced Life Support	Number of Runs	CV	Basic Life Support	Number of Runs	CV	ALS Runs as a Percent of Total
IX	Nevada	1290	Aetna Casualty and Life	$309	1,260	14	$171	8,920	26	12.4%
	REGION IX TOTAL			$295	104,340	---	$160	188,480	---	35.6%
X	Alaska	1020	Aetna Casualty and Life	*	80	*	$77	960	72	7.7%
X	Idaho	5130	Equitable Life Assurance	$170	2,300	33	$114	6,540	40	26.0%
X	Oregon	1380	Aetna Casualty and Life	$257	10,560	42	$161	20,080	60	34.5%
X	Washington	930	Washington Physicians Ser	$247	10,920	32	$153	42,860	43	20.3%
	REGION X TOTAL			$244	23,860	---	$151	70,440	---	25.3%
	Railroad	10071	The Travelers	$205	13,060	46	$109	92,420	58	12.4%
	TOTAL MEDICARE			$202	522,780	50	$115	2,689,780	77	16.3%

Source: Project HOPE Calculations from the 1987 BMAD Beneficiary File.

* Sample Size Less Than 30.

Note: Five percent sample has been multiplied by 20 to obtain estimates of the number of runs.
Data exclude multiple trip runs made in one day.

Table D-8. Comparison of Average Allowed Charges for an Ambulance Trip to Base Rates by Level of Service and Carrier, 1987

Region	State	Carrier Number	Carrier Name	ALS Trip	ALS Base Rate Noninclusive (A0223)	Percent Difference	BLS Trip	BLS Base Rate (A0010)	Percent Difference
I	Connecticut	10230	The Travelers	*	$185	---	$136	$97	40%
I	Maine	21200	BS of Mass/Maine	$199	$95	109%	$113	$68	66%
I	Massachusetts	700	BS of Massachusetts	$259	$121	114%	$189	$116	63%
I	New Hampshire/Vermont	780	Massachusetts BC/BS	$160	$88	83%	$93	$59	59%
I	Rhode Island	870	BS of Rhode Island	*	---	---	$130	$84	55%
II	New Jersey	13310	Prudential	---	---	---	$103	$64	61%
II	New York	14330	Group Health	---	---	---	$141	$130	9%
II	New York	801	BS of Western New York	$180	---	---	$102	$75	37%
II	New York	803	Empire BC/BS	$189	---	---	$140	$106	33%
III	Delaware	570	Pennsylvania Blue Shield	*	*	---	$88	$69	27%
III	Maryland	690	BS of Maryland	---	---	---	$113	$86	32%
III	Pennsylvania	865	Pennsylvania BS	$196	$199	-1%	$136	$88	55%
III	Virginia	10490	The Travelers	$128	$43	198%	$93	$55	68%
III	Washington, D.C.	580	Pennsylvania Blue Shield	$60	$50	20%	$80	$58	38%
III	West Virginia	16510	Nationwide	$141	$110	28%	$56	$55	2%
IV	Alabama	510	BC/BS of Alabama	$122	$70	75%	$79	$60	32%
IV	Florida	590	BS of Florida	$148	---	---	$89	$69	29%
IV	Georgia	13110	Prudential Insurance	$114	$63	82%	$75	$54	38%
IV	Kentucky	660	BC/BS of Kentucky	$103	$79	30%	$88	$53	66%
IV	Mississippi	10250	The Travelers	$118	$86	38%	$71	$52	37%
IV	North Carolina	13340	Prudential	$72	$46	55%	$66	$46	45%
IV	South Carolina	880	BC/BS of South Carolina	$88	$58	53%	*	*	---
IV	Tennessee	5440	Equitable Life Assurance	$111	$75	47%	$73	$52	41%
V	Illinois	621	BS of Illinois	$150	---	---	$87	$68	29%
V	Indiana	630	Mutual Medical Insurance	$199	$131	51%	$89	$65	36%
V	Michigan	710	BC/BS of Michigan	$192	---	---	$105	$88	19%
V	Minnesota	720	BS of Minnesota	$309	$241	28%	$120	$78	55%
V	Minnesota	10240	The Travelers	$244	$375	-35%	$125	$68	81%
V	Ohio	16360	Nationwide	$275	$81	239%	$102	$76	34%
V	Wisconsin	951	Wisconsin Physicians Serv	$253	$198	28%	$108	$83	31%
VI	Arkansas	570	Arkansas BS	$188	$65	189%	$97	$61	60%

Table D-8. Comparison of Average Allowed Charges for an Ambulance Trip to Base Rates by Level of Service and Carrier, 1987

Region	State	Carrier Number	Carrier Name	ALS Trip	ALS Base Rate Noninclusive (A0225)	Percent Difference	BLS Trip	BLS Base Rate (A0010)	Percent Difference
VI	Louisiana	528	Arkansas BC/BS	$239	$115	107%	$146	$93	56%
VI	New Mexico	1360	Aetna Casualty and Life	$235	---	---	$95	$66	45%
VI	Oklahoma	1370	Aetna Casualty and Life	$344	---	---	$118	$94	26%
VI	Texas	900	Group Medical and Surgica	$136	$77	77%	$107	$74	45%
VII	Iowa	640	BS of Iowa	$136	---	---	$83	$54	55%
VII	Kansas	650	Kansas BS	$108	$71	52%	$83	$56	50%
VII	Kansas/Missouri	740	BS of Kansas City	$288	$177	62%	$111	$64	74%
VII	Missouri	11260	General American Life	$117	$61	92%	$84	$63	33%
VII	Nebraska	645	Iowa BC/BS Nebraska	$165	---	---	$80	$56	42%
VIII	Colorado	550	Colorado Medical Service	$238	$174	37%	$147	$103	44%
VIII	Montana	751	Montana Physicians Servic	*	$122	---	$126	$82	54%
VIII	North/South Dakota	820	BS of North Dakota	$173	$137	27%	$89	$57	57%
VIII	Utah	910	BS of Utah	*	$153	---	$132	$81	63%
VIII	Wyoming	5530	Equitable Life	*	$42	---	$116	$58	99%
IX	Arizona	1030	Aetna Casualty and Life	$213	----	---	$139	$103	35%
IX	California	2050	Occidental Life	$234	----	---	$142	$106	34%
IX	California	542	California Physicians Ser	$329	----	---	$179	$128	40%
IX	Hawaii	1120	Aetna Casualty and Life	$189	----	---	$142	$125	13%
IX	Nevada	1290	Aetna Casualty and Life	$309	----	---	$171	$117	46%
X	Alaska	1020	Aetna Casualty and Life	*	$140	---	$77	$48	59%
X	Idaho	5130	Equitable Life Assurance	$170	$157	8%	$114	$86	32%
X	Oregon	1380	Aetna Casualty and Life	$257	$169	52%	$161	$115	40%
X	Washington	930	Washington Physicians Ser	$247	----	---	$153	$113	35%
	Railroad	10071	The Travelers	$205	$140	47%	$109	$83	31%
	TOTAL MEDICARE			$202	$116	74%	$115	$81	42%

Source Project HOPE Calculations from the 1987 BMAD Beneficiary and Procedure files.

* Sample Size Less than 30 Carrier did not use code A0225.

Note Data for advanced life support trips and base rates are not strictly comparable. Many carriers predominantly use an all-inclusive ALS code. The cost of these all inclusive trips is included in the average reimbursement for an ALS trip.

Table D-8. Comparison of Average Allowed Charges for an Ambulance Trip to Base Rates by Level of Service and Carrier, 1987

Region	State	Carrier Number	Carrier Name	ALS Trip	ALS Base Rate Noninclusive (A0223)	Percent Difference	BLS Trip	BLS Base Rate (A0010)	Percent Difference

APPENDIX E

PROJECT HOPE

WASHINGTON OFFICE: TWO WISCONSIN CIRCLE, SUITE 500, CHEVY CHASE, MARYLAND 20815 301/656-7401

Center for Health Affairs

FAX (301) 654-9629

April 27, 1990

Dear ambulance provider:

As part of a Congressional mandate, the Health Care Financing Administration (HCFA)--a federal agency in charge of Medicare--is funding a survey of ambulance providers. This survey is being conducted by Project HOPE and Social and Scientific Systems, Inc. Your company has been selected as one of 470 ambulance companies in the states of California, Michigan, Texas, and Massachusetts to participate.

We cannot overemphasize the importance of your response to this survey. This is the first time that HCFA has conducted a survey of ambulance providers and your input will be critical to the formulation of Medicare policy. Your response will be held in the strictest confidence. Any identifying names will be removed from the final data tape prior to submission to HCFA.

Understanding the time constraints that you face, we have made every effort to keep this survey short and relatively simple to complete. Please note that for some of the questions, such as the average age of your ambulance fleet, your best guess is adequate. It is essential, however, that the cost data you provide be accurate. Most of the terms that we have used are in common usage, although the term "emergency" deserves further clarification. For the purposes of this survey, we are defining "emergency" as a non-scheduled ambulance run. Any run that has been pre-arranged is classified as a non-emergency run. Under this definition, a non-emergency run could require either basic or advanced life support.

Please complete the survey and mail it back to Social and Scientific Systems, Inc. by May 25th. If you need any further assistance with the survey or would like to clarify some of the questions please call our toll-free number: 1-800-654-5559. Ask for Nancy Bowen and state that you are calling in regards to the ambulance survey.

We would like to thank you in advance for your participation and support.

Sincerely,

Penny Mohr
Project Coordinator

Board of Directors: Joseph F. Abely, Jr., J. Patrick Barrett, Herbert J. Bloom, D.D.S., Ph.D., Robert E. Carnegie, Mrs. Edward N. Cole, J. Edward Day, William L. Hess,

AMBULANCE SERVICE PROVIDER SURVEY 1990

Please answer the questions on the basis of your 1989 fiscal year.
Specify the ending month of your fiscal year:_____

CHARACTERISTICS OF THE SERVICE

Ownership of the service (Please check all that applied to your organization in FY 1989). Is your organization:

Private _____
Government owned and operated (State/municipal/county) _____
Volunteer _____
Hospital-based _____
Hospital-owned _____
Other _____
Please specify _____

Did you run your own air ambulance service in FY 1989? _____Yes _____No

How many separate garages (stations) did you operate in FY 1989? _____

Please answer the following questions based on your ground services only.

SERVICES PROVIDED

A. How many calls did you respond to in FY 1989? _____
B. What percentage of these resulted in patient transfer? _____%
C. What percentage of your calls that resulted in patient transfer were emergency calls? _____%

In FY 1989, were you licensed to provide ALS services? _____Yes _____No

What percent of your emergency calls were: Basic Life Support _____%
Advanced Life Support _____%

What percent of your non-emergency calls were: Basic Life Support _____%
Advanced Life Support _____%

Are your response times mandated by a local authority? _____Yes _____No

What was your average emergency response time? _____min
(Please consider the time from receipt of call to arrival at the scene only)

On what percent of your emergency calls did you have the capability to perform the following functions?

IV Therapy _____%
Endotracheal intubation _____%
EKG (Cardiac) monitoring _____%

RESOURCES

How many vehicles did you have in operation on average in FY 1989?

ALS _____ BLS _____ Other_____

Please estimate their average age. _____ yr.

How many chassis miles do you estimate your ambulance fleet traveled in FY 1989? _____ mi

What percent of your total FTE staff are paid? _____ %

Please provide us with the average wages by level of staff that you paid in FY 1989.
Check here _____ if you have a volunteer staff only and the question does not apply.

	Average hourly wage
Paramedics	$_____
EMTs	$_____
Other (crew, administrative, maintenance, etc.)	$_____

Overall, what percent of the base hourly wage do you pay for fringe benefits? (Include workers compensation, health insurance, life insurance, pension) _____%

How many staff went on an average ALS and BLS call?

	ALS	BLS
Paramedics	_____	_____
EMTs	_____	_____
Other	_____	_____

EXPENDITURES

Report below the expenditures for your ambulance service for FY 1989. If you do not have expenditures in a category, please enter "0".

		Amount
A.	Vehicles: (Maintenance, repairs, gasoline, oil, tires, insurance, lease expense, etc.)	$_____
B.	Supplies: (Medical supplies, equipment for patient care, etc.)	$_____
C.	Office/Garage Space: (Rent, lease, mortgage, utilities, building repairs)	$_____
D.	Insurance: (Auto liability, professional liability, property, and building)	$_____
E.	Personnel: (Salaries, training, health insurance, payroll taxes, pension, uniforms, workers compensation, and other fringe benefits)	$_____
F.	Depreciation: (Ambulance, equipment on ambulance, office equipment, building, etc.)	$_____
G.	Bad Debt: (If you charge for services)	$_____
H.	General Administrative Expenses:	$_____
I.	Other (Please Specify) _____ _____	$_____
	TOTAL EXPENDITURES	$_____

How many square feet of office and garage space did you have in FY 1989? _____ sq. ft.

FEE STRUCTURE

If you charged for your services, indicate which of the following were separate components of your fee structure in FY 1989. Provide us with an average for all payers. Check here if you did not charge for services and the question does not apply. _____

	Circle "No" or "Yes"		If Yes, what was the charge?
Base ALS charge per call?	No	Yes	$_____
Base BLS charge per call?	No	Yes	$_____
Fee for ALS mileage?	No	Yes	$_____
Fee for BLS mileage?	No	Yes	$_____
Add-on fee for oxygen?	No	Yes	$_____

2. Please estimate your average charge per run for FY 1989?

ALS $_____
BLS $_____

3. Are your rates regulated by state or local government? _____ Yes _____ No

SELECTED SOURCES OF FUNDS

Please estimate the total amount of revenue you obtained from the following sources in FY 1989:

		Amount
1.	Medicare	$_____
2.	Medicaid	$_____
3.	Other Government (state/municipal/county)	$_____
4.	Fund raising/Gifts	$_____
5.	Private Contractual Arrangements/Subscription Service	$_____
6.	Patient Out-Of-Pocket	$_____
7.	Private Insurance	$_____

WE APPRECIATE THE TIME AND CARE THAT YOU DEVOTED TO FILLING OUT THIS SURVEY. THANK YOU!

Table E-1

Number of Respondents, Mean and Standard Deviation for Questions On the Survey of Ambulance Providers

Question No.	Variable	n	Mean	SD
A1	Private	212	.25	.434
	Government	212	.462	.499
	Volunteer	212	.236	.426
	Hosp. Based	212	.052	.222
	Hosp. Owned	212	.047	.213
	Other	212	.028	.167
A2	Air	126	.063	.245
A3	Garages	212	2.45	5.43
$B1_A$	Calls	212	6,069	23,732
$B1_B$	% Patient Transfer	205	78.2	25.0
$B1_C$	% Emerg. Calls	205	76.5	29.3
B_2	ALS Licensed	148	.439	.418
B3	% Emerg. Calls BLS	206	73.1	34.4
	% Emerg. Calls ALS	206	24.7	32.9
B4	% Non-Em. Calls BLS	210	53.1	46.7
	% Non-Em. Calls ALS	207	9.7	23.9
B5	Response Times Mand. (frac.)	130	.362	.482
B6	Avg (Emer Call) Response time	203	7.08	3.94
B7	% IV Capability	111	42.9	43.6
	% Endotrach. Intub, Cap.	110	35.7	43.7
	% EKG Cap.	109	45.7	43.9
C1	# ALS Vehic	212	2.12	5.71
	# BLS Vehic	212	2.46	6.42
	Oth. Vehic	212	.56	2.83
C2	Vehic. Age	211	5.50	4.99
C3	Miles Veh. Trav. '89	186	95,337	275,504
C4	% FTE Staff paid	206	66.9	45.8
C5	Fraction with Volunteer Staff	211	.246	.432

Table D-2. Procedure Code Reimbursement by Carrier

REGION	CARRIER	STATE	HCPCS	DESCRIPTION	TOTAL REIMBURSEMENT	PERCENT
			A0020	BLS,PER MILE, ONE WAY	287,768	15.18
			A0223	ALS BASE RATE, NONINCLUSIVE	239,130	12.62
			A0222	RETURN TRIP	115,114	6.07
			A0070	OXYGEN	65,843	3.47
				OTHER	65,259	3.44
04	13110	Georgia	00000	CARRIER TOTAL	8,279,666	100.00
			A0010	BASE RATE, BLS, ONE WAY	5,443,704	65.75
			A0020	BLS,PER MILE, ONE WAY	1,587,932	19.18
			A0223	ALS BASE RATE, NONINCLUSIVE	427,924	5.17
			A0070	OXYGEN	297,296	3.59
				OTHER	522,810	6.31
04	13340	North Carolina	00000	CARRIER TOTAL	5,819,666	100.00
			A0010	BASE RATE, BLS, ONE WAY	3,106,897	53.39
			A0070	OXYGEN	794,195	13.65
			A0020	BLS,PER MILE, ONE WAY	578,379	9.94
			A0223	ALS BASE RATE, NONINCLUSIVE	410,887	7.06
			Y0000	BASE	371,490	6.38
				OTHER	1,703	0.03
05	00621	Illinois	00000	CARRIER TOTAL	23,829,247	100.00
			A0010	BASE RATE, BLS, ONE WAY	13,741,677	57.67
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	3,693,639	15.50
			A0020	BLS,PER MILE, ONE WAY	3,658,694	15.35
			A0070	OXYGEN	765,748	3.21
			W9962	NIGHT	699,850	2.94
			93005	EKG	636,446	2.67
				OTHER	633,193	2.66
05	00630	Indiana	00000	CARRIER TOTAL	14,560,981	100.00
			A0010	BASE RATE, BLS, ONE WAY	5,386,207	36.99
			A0222	RETURN TRIP	2,705,967	18.58
			A0223	ALS BASE RATE, NONINCLUSIVE	2,125,774	14.60
			A0020	BLS,PER MILE, ONE WAY	1,554,224	10.67
			Y9014	MILEAGE	709,865	4.88
			Y9004	EMERGENCY	469,777	3.23
			A0070	OXYGEN	405,605	2.79
			A0999	UNLISTED AMBULANCE SERVICE	318,055	2.18
			A0221	ALS PER MILE, ONE WAY	293,342	2.01
				OTHER	1,140,478	7.83
05	00710	Michigan	00000	CARRIER TOTAL	28,435,968	100.00
			A0010	BASE RATE, BLS, ONE WAY	18,708,009	65.79
			A0220	ALS, BASE RATE, ALL INCLUSIVE, ONE WAY	5,418,557	19.06
			A0020	BLS,PER MILE, ONE WAY	3,602,208	12.67
				OTHER	707,194	2.49
05	00720	Minnesota	00000	CARRIER TOTAL	2,137,426	100.00
			A0010	BASE RATE, BLS, ONE WAY	956,578	44.75
			A0020	BLS,PER MILE, ONE WAY	447,878	21.06

Table E-1 (Continued)

Question No.	Variable	n	Mean	SD
	Paramedic Wage	89	8.56	5.08
	EMT Wage	134	8.08	5.13
	Other Wage	74	9.63	6.31
C6	Fringes 95% of Wage	81	20.1	17.0
C7	# Param. on ALS Calls	212	.625	.817
	# Param on BLS Calls	212	.316	.674
	# EMT on ALS Calls	212	.583	.873
	# EMT on BLS Calls	212	1.72	1.41
	# Other on ALS Calls	48	.375	.64
	# Other on BLS Calls	93	.683	.765
D1A	Vehic. Expend.	188	56,530	157,374
B	Supplies Expend.	140	60,963	317,840
C	Office/Garage Space Expend.	177	30,066	108,173
D	Insurance Expend.	116	54,630	257,235
E	Personnel Expend.	185	644,321	3,261.06
F	Deprec. Expense	103	39,469	119,373
G	Bad Debt Expense	101	376,027	18,664.77
H	Gen. Admin. Expense	109	102,832	384,497
I	Other Expense	85	47,950	155,424
D2	Total Expenditures	212	10,696.38	38,609.28
	Sq ft Office and Garage Space	160	4682	10,449
E1	No fees (fract.)	212	.113	.346
	Base ALS fee per call	71	192.08	146.23
	Base BLS fee per call	139	127.80	73.07
	Add on fee ALS mileage	136	6.97	18.83
	Add on fee BLS mileage	147	4.13	3.09
	Add on fee for oxygen	103	18.62	14.40
	Add on fee for other	15	10.67	26.92
E2	Avg. charge per ALS Call	97	257.90	200.18
	Avg. charge per			

Table E-1 (Continued)

Question No.	Variable	n	Mean	SD
E3	BLS Call Rates Regulated (Eval.)	193	156.11	117.57
		129	.558	.499
F	Medicare Funds	136	208,132	556,701
	Medicaid Funds	131	63,674	200,869
	Oth. Govt. Funds	159	285,297	19,383.98
	Fund Raising	156	5,621	3,056
	Priv. Contract Funds	119	104,395	525,606
	Patient Out-Pocket	114	161,431	691,353
	Priv. Insur. Funds	121	195,904	640,989
	Total Funds	77	13,187.61	37,312.33
	Years of Service	201	18.2	14.9
	Used Accounting data to answer (frac.)	212	.514	.501

APPENDIX F

Appendix F

ESTIMATING AMBULANCE PROVIDER COSTS: AN ECONOMETRIC APPROACH

Introduction

This appendix describes in detail the econometric approach used to generate the cost estimates shown in Table 4.16 in Chapter 4. This approach potentially provides information on both the structure of ambulance provider costs and the level of per unit and marginal costs for a typical provider at a given level of output. An econometric or economic approach to cost analysis can be contrasted with the two major alternatives--the accounting approach or an engineering approach. An accounting approach would involve detailed audits of a sample of providers to verify measures of total costs and outputs. An engineering approach might use time-motion analysis and a computer model of the production process to generate cost predictions, given input prices. A major advantage of the economic approach is that it can be much less costly to estimate costs that are representative of a larger number of real world providers. Detailed audits and time-motion studies of individual firms are prohibitively expensive for a sample as large as that used here. On the other hand, the results of the economic approach can be sensitive to the quality of the data collected, and the reliability of data collected from surveys is less than that gathered in detailed audits or engineering studies. One of the aims of the analysis is assess data quality using several internal validity checks available in this approach.

Statistical Cost Analysis: Underlying Assumptions

This econometric approach essentially uses regression analysis to predict the level of total costs as a function of output levels and input prices across a sample of providers. This "statistical cost function" can then be used to generate

estimates of average (per unit) and marginal (incremental costs of producing another unit of output) costs across different types of providers. In these comparisons, provider type, location, output levels, input prices and other characteristics are held constant.

This approach assumes that providers are, in general, attempting to minimize the costs of producing their goods or services, holding technology and input prices constant. Also, in terms of purchasing inputs (labor, equipment, and facilities), providers are assumed to operate in competitive markets where they have little control over prices. They generally must accept market prices for these inputs as given. For labor services, this assumption is reasonable, since the vast majority of ambulance services are provided in urban areas where competition against other employers for workers would probably be high. For capital expenditures (vehicles, equipment, buildings), it is also unlikely that any provider could control or affect prices. The same holds true for supplies.

Each firm is also assumed to more or less use the same technology to produce ambulance services. Providers must use skilled labor (paramedics and emergency medical technicians) and in order to offer ambulance services, these laborers require a given quality of equipment. To minimize costs in producing these services, providers must use their resources efficiently. On average, it is assumed that providers send out the appropriate equipment and labor resources on a given call, where appropriate refers to the cost-effectiveness and quality of resources employed.

A statistical cost function has two convenient properties that can be used to check the empirical estimates of the cost function. First, total costs should increase with increasing output. In other words, to produce more, a provider must buy

more labor and/or capital resources, which adds to their total costs. The second property is that all input prices are "homogeneous of degree unity" in total costs, i.e., a 10% increase in the price of inputs will lead to a 10% increase in costs (Silberberg, 1990, provides a good introduction to cost function properties).

Specification and Estimation Methodology

The functional form of the cost function used in this analysis of ambulance providers is known as a hybrid, in that it is a blend of the translog cost function and other, less restrictive forms. This hybrid form has become popular among health economists analyzing costs of "multiproduct" producers, such as hospitals, nursing homes, and home health agencies (see, for example, Granneman, Brown and Pauly, 1986; Kass, 1987; Nyman, 1988; and Dor, 1989.). An important feature of this hybrid form is that, unlike the translog, each firm in the sample need not to produce each type of output under analysis. This is important since some ambulance providers produce only emergency services, while others only produce nonemergency (scheduled) services, and some do both. Moreover, the types of services provided can be further delineated into advanced life support (ALS) and basic life support (BLS).

The hybrid cost function used to estimate ambulance provider costs was specified as follows:

(1) $Cost = a + biQi + ciQi^2 + diQi^3 + eW + fPRK + gj\,xj + u$

where

Cost = natural logarithm of total cost.

Qi = calls of type i (i=emergency ALS, emergency BLS, nonemergency).

lnW = natural logarithm of the weighted average wage rate, where the weights are the share of the total number of paramedics and/or

emergency medical technicians (EMTS) on the given call.

lnPRK = natural logarithm of the price of capital, measured as expenditures on vehicles (maintenance, repair, gasoline, oil, tires, insurance, and lease expense) and depreciation (ambulance, equipment on ambulance, office equipment, and building) per vehicle.

Xj = a vector of provider characteristics, defined as follows:

PRIV = 1 if the firm is privately owned, 0 otherwise;

GOV = 1 if the firm is government owned, 0 otherwise;

VOL = 1 if the firm is volunteer, 0 otherwise (all other is the omitted ownership category);

CA = 1 if the firm is in California, 0 otherwise;

MA = 1 if the firm is in Massachusetts, 0 otherwise;

TX = 1 if the firm is in Texas, 0 otherwise (the omitted state is Michigan);

RES = the average response time in minutes;

MAN = 1 if the firm's response time is mandated by a public authority, 0 otherwise;

lnAGE = natural logarithm of the age (in years) of the firm;

lnDIS = natural logarithm of the distance (in miles) of the average call;

lnGAR = natural logarithm of the number of garages operated by the firm;

PCTNT = percent of total calls ending in no patient transfer;

ACCT = 1 if the provider answered the questionnaire using accounting statements, 0 otherwise.

URB = 1 if the firm is in an urban area, and 0 otherwise.

u = a random disturbance term.

This specification of the cost function is very flexible in allowing total costs to vary with output in a complex, nonlinear manner: the level of output, output-squared and output-cubed are regressors for each type of output. These three parameters (b, c and d) are expected to be positive, negative and positive, respectively. In other words, average and marginal costs are expected to fall and then rise as output increases.

Ordinary least squares estimates of the cost function are unbiased if output and all other independent variables are exogenous, meaning that they affect total costs, rather than vice versa. This assumption is generally plausible in cross sectional analyses. Moreover, in the ambulance sector, the output is produced, for the most part, in an emergency situation, and as such represents random behavior. A provider could change total costs, but emergencies would continue unabated.

All standard errors in this analysis are corrected for heteroskedasticity using the White (1980) method. Heteroskedasticity occurs when these errors do not vary randomly but have some correlation to each other. Heteroskedasticity is a likely problem in a cross-sectional data set because total cost variation could be smaller for providers producing fewer runs than for those producing more runs. Heteroskedasticity biases standard errors, and thus leads to incorrect test statistics.

The coefficients on dummy variables in an economic model with a logarithmic dependent cannot be interpreted as a percentage change. Halvorsen and Palmquist (1980) have shown that if the coefficient on the dummy is positive (negative), the strict percentage interpretation is biased downward (upward). In the discussion below, the Halvorsen-Palmquist adjustments have been made in interpreting the dummy coefficients.

The first cost function analysis estimated costs based on the entire sample of providers. Output was delineated into four types: emergency ALS (EALS), emergency BLS (EBLS), nonemergency ALS (NEALS) and nonemergency BLS (NEBLS) calls. Except for nonemergency ALS, all of the outputs had the expected plus, minus, plus signs for the level, square and cube of output. The smallest level of output in the whole sample is nonemergency ALS. The t-ratios were generally small (near unity) with the whole sample, and the average increasing costs (AIC) estimates averaged $80 to $90, while the marginal costs (MC) estimates were $50 to $60.

This model assumes that the slope coefficients for Yi are the same across provider types and by location. To test this hypothesis, the cost function was tested with a subset of the sample for each provider type and for urban and rural providers. For each category, a number of specifications were estimated. They included (1) Emergency ALS and BLS, (2) total emergency (TE) and total nonemergency (TNE), (3) Emergency ALS and BLS, and TNE, and (4) both Emergency and Nonemergency ALS and BLS. The models reported below are typical of the results found. These findings indicated that the output slope coefficients did vary across ownership types and location. In addition, the cost functions generally behaved as expected, i.e. in nearly every case the total costs are increasing in output, and the hypothesis that the sum of the input prices equaled unity could not be rejected (using an F test).

Sample Weighting

The Survey of Ambulance Providers used a stratified, random survey design where ambulance providers from different states were sampled at different rates. In specifying regression models, the issue about sample weighting to produce best, linear, unbiased estimates (BLUE) of the regression coefficients arose.

When producing estimates of the population means, the use of sample weights is essential to avoid bias. However, the validity of using sample weights to estimate a behavioral relationship has been disputed in the literature (Porter, 1973).

If ambulance providers responded in a similar fashion to exogenous factors (such as input prices and response time requirements), the coefficients from the regression equation would be BLUE and sample weights would be irrelevant. However, it is likely that exogenous factors, not adequately measured in the equation (such as variations in the regulation of the industry), produce differing behavioral responses across states. The use of state dummies in the models allows the underlying behavioral relationship to differ across states and still produces unbiased estimates. Cohen (1986) has shown that the use of data from a stratified sample, without sample weights, can affect the standard errors of the regression coefficients. Techniques (such as SURREGR) have been developed to adjust standard errors (Cohen, et. al., 1988). As this would not have affected the cost forecasts, we have not used this technique.

However, population means were used to derive the marginal and average incremental cost estimates for the "typical" ambulance firm (as explained in more detail below). To derive cost estimates, population means were weighted by the inverse probability of being selected into the sample (the number of respondents divided by the number of ambulance providers in the state). The weights used for the analyses were as follows:

Table F-1
Sample Weights Used By State

	Respondents	Universe	Weight
Massachusetts	60	300	5.00
Michigan	61	369	6.05
Texas	46	836	18.17
California	45	365	8.11

Cost Function Estimates and Calculation of AIC and MC

A. Government Providers

Table F-2 shows the estimates of the cost function for government providers. There are three types of output included: EALS, EBLS, and TNE. Both EALS and EBLS have the positive, negative and positive signs as expected. The TNE measure is not significant. The mean level of TNE is only 150 calls (see Table F-3), which is 2.1 percent of the total calls by government providers. The two input price parameters (W and PRK) sum to 1.06, which is not significantly different from unity. Urban government providers pay 56 percent more in total cost than rural government providers, holding output, input prices, and the included characteristics constant. The state dummy variables show that Massachusetts and Texas have 52 percent and 30 percent lower total costs, other things constant, than Michigan (the omitted state). Government providers with mandated response times have lower total costs, cet. par. A 10 percent increase in the share of providers with mandated response times leads to a 11 percent reduction in total costs. NT represents the total

specified with TE and TNE as the outputs. In addition, the specification was augmented with the percent of private calls that were emergency ALS (EALS) and BLS (EBLS). A 10 percent increase in EALS lead to an 11.92 percent increase in total costs. The wage coefficient of .688 was the largest wage coefficient of any model estimated. The elasticity of garages was .43, i.e. a 50 percent increase in the number of garages (which averages 1.95 in the private subsample) lead to a 21.5 percent increase in total costs. This was consistent with the finding that private firms operate on the declining portion of their average and marginal cost curves. The calculation of AIC and MC in Table 4-16 for EALS and EBLS reflect the impact of the PEALS and PEBLS parameters.

C. Volunteer Providers

The cost function estimate for volunteers is shown in Table F-6. Nearly all of the volunteer output is emergency BLS. Since the other output categories are so small, all calls were lumped together and a single product cost function was estimated. The other unique factor for volunteer providers was that, by definition, they do not pay their workers that directly service customers. Consequently, a wage variable was omitted from the cost function.

This volunteer cost function shows the traditional U-shaped average and marginal costs. Urban volunteer providers have total costs that are 89 percent higher than their rural counterparts, holding level of output, the price of capital, and measured characteristics constant. California volunteers have 148 percent higher total costs than Michigan, while Texas has 59 percent lower total costs than Michigan, other things constant. Mandating response times for volunteer providers has nearly twice the impact as it had with government providers. Unlike government and private providers, distance traveled per call is

significantly related to total costs for volunteers. The elasticity is .32, thus an increase in miles traveled per call of 10 percent would be associated with a 3.2 percent increase in total costs. The average miles traveled per call equalled 41.

D. Urban Providers

The urban cost functions estimates are presented in Table F-8. The two outputs used in the model are total ALS (TALS) and total BLS (TBLS). While the model is well-behaved in that total costs are increasing in output and the marginal and average cost curves are U-shaped, the input prices barely conform to the linear homogeneity proposition required by economic theory. Moreover, very few of the independent variables are significant. Volunteer providers have 65 percent lower costs than all other providers (the omitted ownership category). Employing another garage would involve a 43 percent increase in costs on average (the mean number was 2.4), which would lead to a 12.9 percent increase in total costs.

E. Rural Providers

The estimates of the rural provider cost function are shown in Table F-10. The model is well behaved, except that the TNE parameters are not significant. The wage elasticity is the lowest of any model because over one-third of the rural providers are volunteers, who have a zero wage (in the model, volunteers are given a nominal wage of unity, since the natural log of unity is zero, and wage is always measured in natural logs). The distance elasticity is positive, as found with volunteers. Unlike previous results, an increase in the percent of nontransport calls leads to an increase in total costs, although the parameter on PCTNT merely approaches significance.

Conclusion

In every cost function, output, input prices and characteristics explained over three-fourths of the variation in total costs. For each of the ownership types and locational models, response times and age of firm were never significant. Although not shown here, having air transport capability had no relationship to total costs. The accounting variable was always positive and sometimes significant. Which implies that firms not using accounting data to answer the questionnaire might underestimate actual costs.

Table F-2
Cost Function Estimates for Government Providers

Variable	Parameter	Absolute Value of t Ratio
Constant	5.59	8.66
EALS	.0012446	4.32
$EALS^2$	-1.45-07	2.40
$FALS^3$	1.80-12	1.47
EBLS	.0005593	3.30
$EBLS^2$	-3.1-08	3.03
$EBLS^3$	6.9-13	2.94
TNE	.000218	.16
TNE^2	4.37-07	.19
TNE^3	-3.87-10	.44
lnW	.449	3.69
lnPrk	.611	7.44
Urb	.440	2.02
Ca	.151	.56
Ma	-.691	3.35
Tx	-.340	1.56
Res	-.014	.66
Man	-.355	1.68
lnAge	-.015	.15
lnDis	-.079	1.01
lnGar	-.112	.59
NT	-.000394	2.53
Acct	.212	1.32

n = 98

$\bar{R}^2$ = .8416

F (W+Prk=1)=.2063, Prob > F = .6510

Table F-3
Weighted Means and Standard Deviations for Government Providers
(n=98)

Variable	Mean	SD
TEALS	971	10,800
TEBLS	2,470	30,216
TNE	150	1,130
lnW	1.781	1.781
lnPRK	8.843	4.145
URB	.408	1.455
CA	.133	1.007
MA	.212	1.210
TX	.470	1.478
RES	6.116	12.527
MAN	.227	1.240
lnAGE	2.588	2.309
lnDIS	3.220	3.888
lnGAR	.483	2.414
NT	3,708	51,700
ACCT	.525	1.479
lnCOST	11.89	5.890

Table F-4
Cost Function Estimates for Private Providers

Variable	Parameter	Absolute Value of t Ratio
Constant	5.2370	3.03
TE	.0001813	3.11
TE^2	-5.02-09	1.69
TE^3	5.42-14	1.78
TNE	.0002498	3.31
TNE^2	-7.93-09	2.83
NTE^3	5.68-14	2.63
lnW	.688	1.47
lnPRK	.422	2.78
URB	.289	.93
CA	.792	2.49
MA	.461	1.16
TX	.333	.89
RES	-0.022	.57
MAN	.146	.57
lnAGE	.031	.33
lnDIS	-.025	.37
lnGAR	.431	1.81
NT	-.000106	1.48
ACCT	.306	1.22
EALS	1.192	1.91
EBLS	.503	.77

N=53

$\bar{R}^2$ = .8183
F(w+Prk=1)=.0639, Prob> F=.8021

Table F-5
Weighted Means and Standard Deviations for Private Providers

Variable	Mean	SD
TE	4,402	32,358
TNE	4,803	41,312
lnW	1.814	1.217
lnPRK	9.563	2.581
URB	.659	1.501
CA	.373	1.532
MA	.058	.737
TX	.453	1.576
RES	7.666	10.535
MAN	.530	1.580
lnAGE	2.159	3.379
lnDIS	3.542	3.514
lnGAR	.675	2.664
NT	2,385	22,021
ACCT	.655	1.505
EBLS	.536	1.241
EALS	.419	1.256
lnCOST	13.121	5.751

Table F-6
Cost Function Estimates for Volunteer Providers

Variable	Parameter	Absolute Value of t Ratio
Constant	4.52	5.06
Q	.003379	2.79
Q^2	-.0000013	1.15
Q^3	1.73-10	.70
lnPRK	.407	6.83
URB	6.29	2.16
CA	.902	2.98
MA	-.164	.50
TX	-.836	4.46
RES	.071	2.45
MAN	-.653	2.98
lnAGE	-.071	.32
lnDIS	.32	2.68
lnGAR	-.091	.30
PCTNT	-.314	1.13
ACCT	.51	2.54

n=50

$\bar{R}^2$=.7769

Table F-7
Weighted Means and Standard Deviations for Volunteer Providers

Variable	Mean	SD
Q	426	2,158
lnPRK	8.011	3.993
URB	.160	1.205
CA	.031	.566
MA	.066	.817
TX	.652	1.566
RES	8.891	11.924
MAN	.189	1.286
lnAGE	2.640	1.584
lnDIS	3.708	2.647
lnGAR	.122	.985
PCTNT	.235	.958
ACCT	.516	1.643
lnCOST	9.934	4.455

Table F-8
Cost Function Estimates for Urban Providers

Variable	Parameter	Absolute Value of t Ratio
Constant	7.3773	5.82
TALS	.0002617	3.70
$TALS^2$	-1.01-08	2.35
$TALS^3$	1.24-13	1.93
TBLS	.0001502	3.01
$TBLS^2$	-4.53-09	1.90
$TBLS^3$	3.53-14	1.47
lnW	.091	.39
lnPRK	.521	4.34
CA	.403	1.34
MA	.064	.19
TX	-.040	.13
RES	.003	.14
MAN	-.152	.74
ln AGE	.113	1.01
ln DIS	-.088	.77
ln GAR	.277	1.86
NT	3.9-07	.04
ACCT	.10	.59
PRIV	-.323	.86
GOV	-.224	.80
VOL	-1.142	2.43

n= 83

$\bar{R}^2$ =.7773
F(w+Prk=1) = 2.4097, Prob>F=.1258

Table F-9
Weighted Means and Standard Deviations for Urban Providers

Variable	Mean	SD
TALS	3,728	29,336
TBLS	5,654	42,644
lnW	2.000	1.933
lnPRK	9.708	2.504
CA	.282	1.410
MA	.131	1.055
TX	.497	1.566
RES	6.941	12.355
MAN	.465	1.562
lnAGE	2.420	2.961
lnDIS	3.038	3.663
lnGAR	.878	2.918
NT	5,419	57,963
ACCT	.576	1.548
PRIV	.427	1.549
GOV	.431	1.551
VOL	.105	.962
lnCOST	13.369	5.130

Table F-10
Cost Function Estimates for Rural Providers

Variable	Parameter	Absolute Value of t Ratio
Constant	4.23	7.79
EALS	.002409	1.66
$EALS^2$	-.0000019	.83
$EALS^3$	4.46-10	.57
EBLS	.002773	3.48
$EBLS_2$	-.0000015	2.01
$EBLS^3$	1.17-10	.87
TNE	.000794	.60
TNE^2	-8.0-07	.38
TNE^3	3.99-10	.49
lnW	.207	2.01
lnPRK	.632	9.85
PRIV	-.263	.87
GOV	.074	.26
VOL	-.162	.51
CA	.239	.93
MA	-.426	1.76
TX	-.336	2.05
RES	.005	.31
MAN	-.158	1.89
lnAGE	-.093	1.19
lnDIS	.148	1.89
lnGAR	.408	1.89
PCTNT	.327	1.11
ACCT	.274	1.78

n=129

$\bar{R}^2$ =. 7950
F(w+Prk=1)=1.9155, Prob>F=.1693

Table F-11
Weighted Means and Standard Deviations for Rural Providers
(n=129)

Variable	Mean	SD
TEALS	111	886
TEBLS	235	2,065
TNE	162	393
lnW	.979	2.959
lnPRK	8.240	3.952
Priv	.150	1.087
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MA	.127	1.012
TX	.506	1.521
RES	7.623	12.546
MAN	.201	1.220
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